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March 28, 2022

Mr. Chan Pongkhamsing  
EPA Remedial Project Manager  
U.S. EPA Region 10  
1200 Sixth Avenue, ECL 111  
Seattle, WA 98101

RE: Response to Comments on the *Acid Sump Area Source Assessment Report*

Dear Mr. Pongkhamsing:

This letter is in response to the U.S. Environmental Protection Agency's (EPA's) comments on the *Acid Sump Area Source Assessment Report*. ATI has revised the *Acid Sump Area Source Assessment Report* to incorporate the comments below and it attached to these response to comments.

**EPA General Comment #1**

Data are presented well.

**ATI Response**

ATI appreciates EPA's comment.

**EPA General Comment #2**

During the July site investigation, we looked at replacement sump drawings and the drain lines leading to the sump, weren't these supposed to be included in the report?

**ATI Response**

The sump and drain line drawings viewed at the facility in July are confidential. Therefore, they cannot be included in this or any report. As further detailed in the responses below, the attached revised report includes information that is appropriate for release into the public domain.

**EPA Comment #1**

Section 1.1 - Add a paragraph on the acid sump construction and use, the removal and replacement of the acid sump and the current usage of the sump. Copy the construction plans into the report. Show the location of the sump and the lines leading to the sump on a figure.

**ATI Response**

A paragraph has been added to Section 1.1 regarding general use and construction of the acid sump. However, construction plans are not included in the revised report due to proprietary concerns.

**EPA Comment #2**

Section 1.2 - Add information on the source of TCA in drainage lines to the sump and through the sidewalls of the leaking sump into the CSM. Consider the potential role of saturated conditions detected in shallow soil during the investigation in mobilizing TCA from the site.

**ATI Response**

Similarly to the sump constraints, ATI is unable to release drain line drawings. General information regarding the drainage lines has been added to Section 1.1.

**EPA Comment #2**

Figure 5 - The top hydrograph (I-3) initially has the highest groundwater elevation and then drops off to the middle of the pack. Does this have to do with a source of recharge being removed? Also, the response of each of the wells to the precipitation event around June 13 is of interest. In the report evaluating the data consider calculating the time lag between the precipitation event and the highest groundwater elevation in each of the well to estimate the distance to the recharge area. PW12 appears to be closest to a recharge zone; PW92a is furthest from a recharge area.

**ATI Response**

The transducers are scheduled to be removed in May, or possible mid-summer, after collecting data for one year to capture seasonal variations. Once all the data is available, ATI will analyze the information and provide a report outlining a summary of the data, observations, and conclusions. The report will address the issues raised above.

If you have any questions, please feel free to contact me by phone at 541.812.7230 or by email at Michael.Riley@ATImetals.com.

Sincerely,



Michael Riley  
Manager, Environmental Operations & Compliance

Enclosures: 1. Acid Sump Area Source Assessment Report, Revised



ATI Millersburg Operations

# Acid Sump Area Source Assessment Report

Revised

March 2022

Prepared by:

**GSI Water Solutions, Inc.**

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## Abbreviations and Acronyms

µg/L	micrograms per liter
ASA	Acid Sump Area
ATI	Allegheny Technologies Incorporated
bgs	below ground surface
GETS	Groundwater Extraction and Treatment System
CSM	conceptual site model
CVOC	chlorinated volatile organic compound
DCA	1,1-dichloroethane
DCE	1,1-dichloroethene
DNAPL	dense non-aqueous phase liquid
EISB	enhanced in situ bioremediation
EPA	U.S. Environmental Protection Agency
ESD	Explanation of Significant Differences
ft	feet
ft/day	feet per day
GSI	GSI Water Solutions, Inc.
MCL	maximum contaminant level
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
Operations Plan	<i>Acid Sump Area Source Area DNAPL Assessment Operations Plan</i>
PID	photoionization detector
ppm	parts per million
PVC	polyvinyl chloride
ROD	Record of Decision
RSD	relative standard deviation
TCA	1,1,1-trichloroethane
UV	ultraviolet
VC	vinyl chloride
Work Plan	<i>Revised Acid Sump Area Source Area Remedial Design Work Plan</i>

## Section 1: Introduction

Additional assessment was conducted in July 2021 in the Acid Sump Area (ASA), which is located in the Fabrication Area of the Allegheny Technologies Incorporated (ATI) Millersburg Operations Facility in Millersburg, Oregon (Site; see Figure 1). Work was conducted in accordance with the U.S. Environmental Protection Area (EPA) approved Revised Acid Sump Area Source Area Remedial Design Work Plan (Work Plan; GSI, 2021a) and the Acid Sump Area Source Area DNAPL Assessment Operations Plan (Operations Plan; GSI, 2021b). The following report provides details regarding the source area assessment in the ASA and summarizes results obtained to date.

### 1.1 Background

The acid sump was installed in 1975 and the initial structure consisted of a 10-ft by 10-ft fiberglass reinforced tank fed by floor trenches. Process wastewater was collected in the acid sump from the pickling operations in the analytical laboratory. The wastewater consisted of acids (hydrofluoric and nitric acids), caustics, and prior to 1977, 1,1,1-trichloroethane (TCA) and trichloroethene (TCE). When the initial acid sump was removed in 1985, it had small visible holes present. Floor trenches used to collect and convey the wastewater were also found to be damaged. The sump was replaced with a double-walled tank, and new overhead piping was installed directly from the point of discharge to the sump.

When the historic acid sump was removed in 1985, a soil sample was collected from the base of the excavation. The soil sample contained TCA at a concentration of 1,130 milligrams per kilogram (mg/kg). In 2007, a hard potentially non-ferrous metallic object was encountered about 10 feet below ground surface (bgs) while drilling a new extraction well immediately adjacent to the acid sump building. Fluid from the hole contained TCA at a concentration of 1,420 milligrams per liter (mg/L).

The 1993 remedial investigation/feasibility study revealed the presence of chlorinated volatile organic compounds (CVOCs) in ASA groundwater above EPA National Primary Drinking Water maximum contaminant levels (MCLs; CH2M HILL, 1993),<sup>1</sup> and the groundwater Record of Decision (ROD)<sup>2</sup> for the Site prescribed the actions that ATI needed to take to mitigate CVOCs.

In 2002, a Groundwater Extraction and Treatment System (GETS) began removing CVOCs from the ASA groundwater through extraction well FW-3 (see Figure 2 for well locations). ATI attempted to install an additional extraction well (FW-8) in 2007 (see Figure 3), immediately adjacent to the acid sump. During the drilling of this boring, dense non-aqueous phase liquid (DNAPL) consisting predominantly of TCA was encountered, and the boring was abandoned.

ATI determined that injecting nutrients to accelerate microbial degradation of CVOCs would be more effective at treating the source area and downgradient plume than continued operation of the pump and treat system. EPA issued an Explanation of Significant Differences (ESD) to the 1994 ROD that included enhanced in situ bioremediation (EISB) as part of the remedy for the Site (EPA, 2009). In 2009, EISB was implemented with a biobarrier (located downgradient of the source area) and hydraulically controlled injections (in the source area) consisting of injectate materials designed to enhance reductive dechlorination. Specifically, ATI injected an emulsified soybean oil and sodium lactate blended compound

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<sup>1</sup> Trichloroethene and TCA are the primary parent CVOCs in the ASA. Groundwater samples collected during the 2018 groundwater quality monitoring events indicate that concentrations of tetrachloroethene; 1,1-dichloroethene (DCE); 1,1-dichloroethane (DCA); vinyl chloride (VC); fluoride; and nitrate that exceeds MCLs.

<sup>2</sup> Record of Decision Declaration, Decision Summary, and Responsiveness Summary for Final Remedial Action of Groundwater and Sediments Operable Unit, Teledyne Wah Chang Albany Superfund Site, Millersburg, Oregon (EPA, 1994).

(substrate), buffering agent (to maintain pH above 6), and dechlorinating bacteria to degrade CVOCs (GSI, 2011). In 2016, ATI performed additional source area remediation by excavating approximately 500 cubic yards of CVOC-contaminated soil from the ASA in the vicinity of the former location of well FW-8 (see Figure 3 for excavation boundary; GSI, 2017). The excavation was designed to address the TCA-impacted soil that was encountered at the FW-8 boring location and the excavation was advanced to the top of the Spencer Formation. Prior to backfilling the excavation, alkaline-activated persulfate (Klozure™ by PeroxyChem) was added to the base of the excavation to address residual impacts.

Despite dramatically reduced concentrations of CVOCs in the contaminant plume, groundwater quality data collected during the biannual groundwater sampling conducted in 2018 suggested that DNAPL remains in the ASA.

CVOC concentrations in the vicinity of monitoring well PW-98A have continued to increase since the spring of 2015, with concentrations exceeding cleanup levels for several CVOCs as of fall 2020. Most notably, concentrations of TCA in monitoring well PW-98A have increased by more than an order of magnitude since the fall 2014 monitoring event. Furthermore, CVOC concentrations in well E-11 (located between the Acid Sump Area and the PW-98A well location) have shown minimal increases, suggesting that an additional source zone may be present upgradient of monitoring well PW-98A, not within the ASA.

To efficiently and cost-effectively implement the remediation and address the data gaps, a scope of work was designed to better inform the nature and scope of future source remediation in the ASA. The scope of work is detailed in the Operations Plan (GSI, 2021b), which was prepared to supplement the EPA approved Work Plan (GSI, 2021a). The Operations Plan outlined the project planning, rapid on-site source area/DNAPL assessment, and reporting activities for the project (GSI, 2021b). This report documents the findings of the source area investigation, including the soil and groundwater results and the evaluation of the nature and extent of the DNAPL in the ASA.

## 1.2 Conceptual Site Model

This section presents a simplified conceptual site model (CSM) of the ASA and PW-98A investigation areas located within the Fabrication Area. A detailed CSM is presented in the RI/FS (CH2M HILL, 1993).

Subsurface soils at the Site are divided into four geologic units. From deepest (oldest) to shallowest (youngest), the units are:

- The **Spencer Formation** is Eocene in age and consists of a 2,500-foot (ft) thick sequence of massive marine sandstone, siltstone, and mudstone with interbedded volcanic flows and tuffs.<sup>3</sup> The depth of the top of the Spencer Formation within the ASA and PW-98A investigation areas ranges from approximately 13.5 ft bgs to 17.5 ft bgs. With a hydraulic conductivity ranging from 0.01 to 0.00001 ft per day (ft/day) at the Site, the Spencer Formation is considered an aquitard (CH2M HILL, 1993). DNAPL has been shown to accumulate on the top of this aquitard. The top of the Spencer Formation at ATI is highly irregular due to an erosional period that occurred after deposition. These surface variations likely influence the distribution in DNAPL in the ASA.
- The **Blue Clay**, deposited by lakes or rivers, unconformably overlies the Spencer Formation and is found within its topographic lows (i.e., the Blue Clay is absent where the Spencer Formation was a topographic high [CH2M HILL, 1993]). The Blue Clay was not observed in the ASA or PW98A investigation areas.
- The **Linn Gravel** is an alluvial fan deposited by streams draining the Cascade Mountains (CH2M HILL, 1993) between about 28,000 and 36,000 years before present. The Linn Gravel is typically described on

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<sup>3</sup> Thickness is near Dallas, Oregon, about 20 miles northwest of Millersburg.

boring logs as a silty to sandy gravel with interbeds of silt and sand. The depth of the top of the Linn Gravel within the ASA and PW-98A investigation area varies from approximately 3.5 ft bgs to 13.5 ft bgs, and the unit ranges from several feet to over 10 ft in thickness. It occurs under both confined and unconfined conditions (depending on location) and exhibits a saturated thickness ranging from 14 to 19 ft. The geometric mean hydraulic conductivity of the Linn Gravel varies by area, with values of 2.1 ft/day in the Fabrication Area (CH2M HILL, 1993). The Linn Gravel is the primary water-bearing unit at the Site. The Linn Gravel was the focus of the assessment activities.

- The **Willamette Silt** is composed of fine-grained sediments that settled out of floodwaters that inundated the Willamette Valley more than 19,000 years ago. The Willamette Silt is described as a brown silt with occasional thin sand interbeds. The Willamette Silt occurs under unconfined conditions. The top of the Willamette Silt within the ASA and PW-98A investigation areas ranges from approximately 0.5 ft bgs to 8.5 ft bgs.

Groundwater in the ASA and the PW-98A investigation areas is encountered at less than 10 ft bgs and flows northwest toward Murder Creek. A groundwater divide is present at the southern end of the ASA and groundwater south of the divide flows to the southeast. Groundwater transducers were installed in seven monitoring wells (see Figure 4) in and near the ASA area to collect data daily to evaluate fluctuations in the divide on a seasonal basis. The transducers were installed in April 2021, and data obtained through August 2021 are provided on Figure 5. Data collected over the full year long monitoring period (through April 2022) will be provided as part of a separate submittal.

## 1.3 Investigation Objectives

Additional remedial action in the ASA is required, and in order to evaluate applicable remedial alternatives and design an appropriate approach, additional site characterization was warranted. The objectives of the investigation included the following:

- **Determine the Nature of the DNAPL Material Present in the Acid Sump Area** - DNAPL has been confirmed in the ASA and a significant amount of this DNAPL material has been addressed with previous remedial efforts, including the excavation completed in 2016. This assessment was designed to determine if pooled DNAPL exists outside the former excavation footprint.
- **Determine the DNAPL Extent in the Acid Sump Area** - Defining the horizontal limits of DNAPL in the ASA is required to evaluate and design future remedial efforts in the ASA.
- **Determine the Source for CVOCS Present in Monitoring Well PW-98A** - Concentrations of CVOCS in PW-98A had previously been attributed to the impacts in the ASA. However, this well lies cross gradient to the ASA. After concentration increases in this well were observed, an additional source of CVOCS was suspected. The final objective of this investigation was to determine the source of impacts to PW-98A.

## 1.4 Report Organization

Consistent with the reporting goals (Task 3) of the Operations Plan, this report provides a summary of the assessment activities conducted and results related to the three investigation objectives outlined above. This report contains the following sections:

- **Project Planning and Execution** – This section describes planning and coordination activities, updating the Health and Safety Plan, locating public and private utilities, and air quality monitoring, all performed in accordance with Task 1 of the Operations Plan.
- **Assessment Tools and Approach** – This section describes construction and installation of the temporary borings/wells, soil and groundwater sampling activities, DNAPL evaluation and characterization, and

boring abandonment/demobilization activities, all performed in accordance with Task 1 of the Operations Plan.

- **Soil and Groundwater Results** – This section presents the results generated from soil and groundwater samples collected during the source area assessment in accordance with Task 1 of the Operations Plan.
- **Summary and Conclusions** – This section presents the nature and extent of DNAPL in the ASA and identified the likely location of the source of CVOCs detected in PW-98A based upon the results of the source area assessment.

## Section 2: Project Planning and Execution

The following section outlines the project planning and coordination activities conducted prior to the start of field activities, as well as health and safety monitoring, underground utility location procedures, and the management of investigation-derived waste material.

### 2.1 Project Planning

Consistent with Task 1 of the Operations Plan, planning and coordination activities were carried out in preparation for the ASA source area DNAPL assessment. The ATI project manager and GSI Water Solutions, Inc. (GSI) personnel scheduled all subcontractors, including the drillers and on-site mobile laboratory, to ensure that planned assessment activities would align with Site operations. The ATI project manager coordinated communication among the ATI production staff, environmental personnel, and GSI field team to ensure that the assessment operations and monitoring observations were completed safely. Public and private underground utility locates were coordinated with the Oregon 811 Utility Location Center and the ATI facility before drilling activities. Project and site-specific Health and Safety Plans were updated, and all project personnel were confirmed to have all necessary site-specific health and safety training prior to working on site.

GSI field staff worked with ATI to site the field equipment and supplies within the ASA project area so as not to impede facility operations.

### 2.2 Temporary Boring Utility Clearance

The temporary boring installations were completed in accordance with the Work Plan. Utility maps were reviewed and a utility locate was conducted to determine whether proposed boring locations conflicted with identified subsurface utilities. On July 16, 2021, the concrete coring contractor began coring through the 18- to 24-inch-thick reinforced concrete present at the proposed boring locations. Beginning July 19, 2021, cored locations were then cleared by hand-augering and/or by the drilling contractor with a vacuum truck to 5 ft bgs to ensure that utilities were not present at each location. During the course of the investigation, underground lines and structures were uncovered. When an obstruction was found, the boring location was adjusted by several feet and a new boring location was cored and cleared.

### 2.3 Air Quality Monitoring

Ambient air quality was monitored during drilling and assessment activities using MultiRAE Lite Multi-Gas Detectors and photoionization detector (PID) units. Multi-gas detector units were placed in the observation areas and in the vicinity of the drill rigs. A PID with an 11.7 electron volt lamp was placed in the area where the soil cores were being processed. The multi-gas detectors were placed in the breathing zone located between 4 and 5 ft above grade surface and ambient air was continuously monitored daily during the assessment activities. No ambient air PID measurements above 0.0 were recorded during the assessment activities.

### 2.4 Equipment Decontamination and Boring Abandonment

Temporary borings were abandoned within 72 hours of initial construction, in accordance with Oregon regulations.<sup>4</sup> Drill rods and reusable well screens were cleaned at the Site, when appropriate, using a brush and an Alconox and tap water wash solution. Equipment was rinsed with tap water and then steam cleaned

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<sup>4</sup> Oregon Administrative Rule (OAR) 690-240.

inside and out. The cleaned equipment was stored on clean storage racks for reuse. All water produced during drill rod and well screen decontamination was drummed.

## **2.5 Investigation-Derived Waste**

Investigation-derived waste material, such as soils, purge and decontamination water, were placed in 55-gallon drums. The drums were labeled by ATI personnel and placed in a designated hazardous waste drum storage area. ATI managed the disposal of the investigation-derived waste within appropriate timeframes and in accordance local, state, and federal requirements.

## Section 3: Assessment Tools and Approach

While previous investigations and remedies (i.e., those conducted from 2009 to the present) helped to further refine ATI's understanding of the extent of CVOCs in ASA groundwater, evaluation was still needed to determine the nature of the DNAPL and refine the horizontal limits of the DNAPL to ensure that remedial action will be successful in addressing the source material present.

Additional data was collected by advancing temporary borings, logging soils, and collecting soil and groundwater samples for analysis of CVOCs within the ASA. This data gap investigation focused on the contact between the Linn Gravel and the underlying Spencer Formation, which has been shown to be an aquitard. DNAPL concentrations have been observed to be at their highest at this contact. As shown on Table 1, all borings in the ASA penetrated the Spencer Formation by at least 0.5 ft so samples could be collected from the top of this unit.

CVOC concentrations in soil and groundwater were analyzed by an onsite, mobile laboratory (e.g., Libby Environmental in Olympia, Washington) or by an off-site laboratory (e.g., Apex Laboratories, LLC in Tigard, Oregon). Subsequent temporary boring locations were selected on the basis of analytical results from the initial borings. Staff from EPA and Oregon Department of Environmental Quality were present on-site during the ASA investigation and were consulted regularly regarding field results and proposed boring locations.

The main operational elements of the field work consisted of the following activities:

- Monitoring ambient air quality during the assessment activities for the presence of contaminants that may adversely impact the health and safety of field and facility personnel.
- Advancing soil borings and installing temporary wells in the ASA.
- Collecting soil and groundwater samples from the ASA investigation areas to evaluate for the presence of DNAPL and evaluating these samples using PID screening, hydrophobic dyes, ultraviolet (UV) fluorescence, visual observation, and analysis by a mobile laboratory.
- Advancing soil borings and installing temporary wells in the PW-98A area to determine whether an additional upgradient source area exists. Soil and groundwater samples were collected from the PW-98A area to assess for the presence of dissolved phase concentrations of the CVOCs.

Each of these activities is discussed in greater detail in the following sections.

### 3.1 DNAPL Assessment Techniques

The distribution of DNAPL is typically highly variable in subsurface media; therefore, multiple lines of evidence are required to identify the potential presence or absence of DNAPL and, whether it is present as pooled or dendritic accumulations. The methods described below were employed during the field investigation to provide data to direct the assessment activities and determine the nature of the DNAPL at the Site:

- **PID Screening.** Vadose zone and saturated zone soil encountered in the Linn Gravel and at the Spencer Formation contact was collected from each boring and screened with a PID at approximately 1-ft intervals where soil recovery was sufficient. Soils collected from the screening intervals exhibited PID readings ranging from 0.0 parts per million (ppm) to a high of 257.7 ppm encountered in vadose zone soils (7 ft bgs) in boring 98A6. The PID screening results are summarized in Table 2.
- **Hydrophobic Dye Test.** According to procedures outlined in the Operations Plan, borings where vadose and/or saturated zone PID readings exceeded 500 ppm were to be evaluated using a hydrophobic dye test. Since none of the PID readings exceeded 500 ppm, each of the ASA borings and boring 98A6 (where the highest PID reading was encountered) were evaluated using the hydrophobic dye test. The

hydrophobic dye tests were performed on selected soil samples collected from the borings, and on groundwater samples collected immediately after boring installation, and in some cases from a duplicate sample collected approximately 5 minutes after the initial sampling, and again 24 hours after boring installation. The samples were tested by placing the collected samples in jars with the Sudan IV Hydrophobic dye, mixing the media with the dye by shaking the jars, and observing to see if a red hue was present. The hydrophobic dye test yielded no results on the soil samples tested.

A slight red hue and red hue were observed during the dye test in the AS2 and AS5 groundwater samples, respectively, collected immediately after boring installation, indicating the presence of DNAPL. A slight red hue was also observed during the dye test in the AS3, AS5, and AS6 groundwater samples collected 24 hours after boring installation, indicating the presence of DNAPL. The groundwater hydrophobic dye test results are summarized in Table 3 and documented in the photo log provided in Appendix B.

- **UV Fluorescence.** At the recommendation of EPA, samples collected from each of the ASA borings and at boring 98A6 where the highest PID reading was encountered, were also evaluated using UV fluorescence field screening. No fluorescence was observed in any of the soil or groundwater samples examined using this method. The UV fluorescence field screening results are summarized in Table 3.
- **DNAPL Gauging.** Temporary wells were left in place for up to 24 hours in the ASA investigation area and evaluated for the presence of pooled (mobile) DNAPL by gauging the temporary wells using a decontaminated non-aqueous phase liquid water interface probe. No measurable DNAPL was encountered.
- **TCA Concentrations.** 1,1,1-TCA is the predominant CVOC present in the ASA. DNAPL may be present if concentrations in groundwater exceed 1 percent of the effective solubility of the CVOC (EPA, 1992). For 1,1,1-TCA, which has an effective solubility of approximately 1,300 mg/L,<sup>5</sup> DNAPL is indicated at concentrations at or exceeding 13,000 micrograms per liter ( $\mu\text{g}/\text{L}$ ). This 1 percent threshold value of 13,000  $\mu\text{g}/\text{L}$  was used to delineate the lateral extent of DNAPL in the ASA.

## 3.2 Temporary Boring Placement, Installation, and Sampling

### 3.2.1 Boring Placement

The Operations Plan anticipated that at least nine temporary vertical borings would be installed in the General Boring Investigation Area that includes the ASA and the PW-98A investigation area. A total of nine temporary vertical borings were advanced in the ASA (AS2 through AS10) and six temporary vertical borings were advanced in the PW98A area (98A2 through 98A7). The borings were installed in the yellow General Boring Investigation Area and the locations are shown in Figures 6 and 7. The initial boring locations were selected based on the historical TCA concentrations indicating the potential presence of DNAPL (AS2 and AS3) and the subsequent boring locations were selected based on real-time data obtained from the on-site mobile laboratory (AS4, AS5, AS6, AS7, AS8, AS9, and AS10). Borings AS1 and 98A1 were initially proposed in the Operations Plan, but were not advanced because more suitable boring locations were selected based on the real time data collected.

Borings were advanced to the top of the Spencer Formation, which was encountered at depths ranging from approximately 13.5 ft bgs to 17.5 ft bgs (see Table 1) using Geoprobe direct-push technology with 2.25-inch drill rods. Soils from the borings below 5 ft bgs were continuously logged according to the Unified Soil

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<sup>5</sup> The aqueous solubility of 1,1,1-TCA is 1,300 mg/L as provided in EPA Regional Screening Level Chemical-specific Parameters Supporting Table, May 2021, accessed on September 30, 2021. [EPA Chemical-Specific Parameters Table](#).

Classification System (ASTM, 2017) and screened using a PID with an 11.7 eV lamp for evidence of DNAPL or elevated CVOC concentrations (see Table 2 and Appendix A).

Soil samples exhibiting the highest PID concentrations in both the unsaturated and saturated zones were collected for laboratory analysis. Soil samples were collected from select borings and select intervals at depths ranging from approximately 5 ft bgs to 17.8 ft bgs (see Table 4). The samples were collected in accordance with the Work Plan and Operations Plan and analyzed for CVOCs by EPA Method 8260B. Samples collected from the ASA and one sample from the PW-98A investigation area were analyzed by the on-site mobile laboratory. The remainder of the samples collected from the PW-98A investigation area were submitted for analysis off-site at Apex Laboratories.

### 3.2.2 Temporary Well Installation and Sampling

Following advancement of each boring, a temporary well was installed consisting of a 48-inch long, 1.25-inch-diameter screen. The well casing was installed to the bottom of each of the boreholes to keep the borehole open in the event of a collapse. The outer drill rods were retracted at approximately 2 ft.

Groundwater was encountered in the temporary borings at depths ranging from 5.81 to 16.08 ft bgs. To evaluate the nature of the DNAPL material, the temporary wells were installed with a well screen straddling the contact between the Linn Gravel and Spencer Formation, and terminating approximately 6 inches to 1 ft within the Spencer Formation (see Appendix A). The wells were designed to allow the collection of groundwater at the interface of the Linn Gravel and Spencer Formation, and to promote the accumulation of DNAPL in the well casing should it be present at the surface of the impermeable Spencer unit.

Groundwater samples were collected within approximately one hour of the temporary well being installed. The soil and groundwater collected during the initial sampling were analyzed by the on-site laboratory and tested using field techniques described in Section 3.1 to determine if DNAPL material was likely present.

GSI used multiple techniques to evaluate the nature of DNAPL present. If the potential presence of DNAPL was indicated using hydrophobic dyes or laboratory analytical data, additional groundwater sampling was conducted at selected time intervals to try to collect pooled (mobile) DNAPL, if present. This included sampling the wells 1) immediately after installation, 2) collecting a duplicate sample approximately five minutes later, 3) after allowing the groundwater to sit overnight allowing for the potential accumulation of DNAPL at the bottom of the well, and 4) 24 hours after installation.

Additionally, at the request of EPA, a “bucket” sample was collected from temporary boring AS5. The purpose of this sample was to see if pooled DNAPL would be pulled into the well as the well was pumped very slowly. All the purged water was collected in the purge water bucket. The bucket was allowed to sit for approximately 2 hours prior to sampling to allow the suspended solids and any product present to settle to the bottom of the bucket. New disposable tubing was then inserted near the bottom of the bucket but above the settled solids for sample collection with a peristaltic pump. The sample was collected in the bucket where pooled DNAPL would be expected, if present.

Groundwater samples were collected in accordance with the Work Plan and Operations Plan and analyzed for CVOCs by EPA Method 8260B by the on-site mobile laboratory. The groundwater sample collected from boring AS9 was also submitted to Apex Laboratories for analysis of sodium by EPA Method 6020B and sulfate by EPA Method 300.0 at the EPA’s request.

The temporary borings and temporary wells were installed in accordance with the methods provided in the Work Plan and Operations Plan. Temporary borings were abandoned within 72 hours of initial construction, in accordance with Oregon regulations.<sup>6</sup>

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<sup>6</sup> Oregon Administrative Rules 690-240.

### 3.2.3 Permanent Monitoring Well Installation and Sampling

Two borings in the PW-98A investigation area were converted into wells to be used for future monitoring. Boring 98A5 was converted to monitoring well TMW-10 and boring 98A6 was converted to well TMW-11. GeoProbe rods were advanced approximately 15.5 ft bgs at the 98A5 boring location and 17 ft bgs at the 98A6 location where the Spencer Formation was encountered. The well screens were set across the Linn Gravel and Spencer Formation interface, where concentrations of CVOCs would most likely be highest. The monitoring wells were installed with the following specifications (see Figures 6 and Appendix A):

- 2-inch polyvinyl chloride (PVC) well casings with 10 slot pre-packed screens, 5 ft in length.
- Filter pack (12/20 sand) was installed around the pre-packed screens as feasible to 2 ft above the top of the pre-packed screens.
- Bentonite annular seal was installed on top of the filter pack to approximately 1.5 ft bgs.
- Concrete surface seal from ground surface to 1.5 ft bgs.
- Wells completed with a flush-mount monument.

Monitoring wells TMW-10 and TMW-11, which were installed during this investigation, will remain in place for up to 5 years and will be sampled during select future monitoring events.

## Section 4: Soil and Groundwater Results

This section discusses the results of the soil and groundwater sampling conducted during the assessment activities. Laboratory reports are provided as Appendix C and are summarized in Tables 4 and 5. The primary analytical methods employed include EPA Methods 8260D, 6020B, and 300.0.<sup>7</sup>

### 4.1 Soil Sample Results

Soil analytical results for the primary CVOCs are discussed below and summarized on Figure 5. Table 4 summarizes the EPA Method 8260D CVOC soil analytical results. The samples collected from the ASA investigation area and sample 98A6 collected from the 7-ft to 8-ft sample interval in the PW-98A investigation area were analyzed by the on-site mobile laboratory. The remainder of the samples collected from the PW-98A investigation area were analyzed by Apex Laboratories due to time constraints during the field investigation.

Other CVOCs exhibiting the highest concentrations in the ASA and PW-98A investigation areas were TCA and DCA. As would be expected based on groundwater concentrations and DNAPL presence, the highest concentrations of TCA and DCA were detected in the central portion of the ASA. Concentrations of TCA in the ASA investigation area ranged from below laboratory detection limits to an estimated concentration of 220 mg/kg found in the duplicate sample collected from boring AS6 at 16.7 to 17.3 ft bgs. DCA concentrations ranged from below laboratory detection limits to a concentration of 71 mg/kg found in the primary sample collected from boring AS6 at 16.7 to 17.3 ft bgs.

CVOCs, including 1,1,2-trichloroethane, trichloroethene, 1,2-dibromoethane, and vinyl chloride (VC), were also identified in several of the ASA investigation area samples and in samples 98A5 and 98A6 in the PW98A investigation area.

### 4.2 Groundwater Results

Groundwater analytical results for the primary COCs are discussed below. Field parameter data from the monitoring events are summarized in Table 3. The groundwater data from the investigation is summarized in Table 5 and displayed on Figures 7 and 8.

#### 4.2.1 Field Parameters

Field parameters were collected using a peristaltic pump from each of the temporary borings during each groundwater sample collection event. The field parameters, which included pH, specific conductance, temperature, dissolved oxygen, oxidation-reduction potential, and turbidity, were recorded using a YSI multi-parameter meter. The field parameters were recorded while briefly purging the wells at an EPA low-flow purge rate of approximately 0.15 gallons per minute or less prior to collection of laboratory samples. The YSI instrument was calibrated daily using fresh calibration standards, and measurements were compared to values from previous events to identify and avoid errors. Field parameter values recorded at each well during the sampling events are included in Table 3.

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<sup>7</sup> Method descriptions for EPA Method 8260B, 6020B, and 300.0 are available at <https://www.epa.gov/esam/selected-analytical-methods-environmental-remediation-and-recovery-sam>.

In the ASA, grab groundwater samples were collected to determine the nature of the DNAPL and collect pooled DNAPL, if present. In these instances, groundwater samples were collected prior to stabilization of field parameters.

## 4.2.2 Groundwater Analytical Results

Table 5 summarizes the EPA Method 8260D CVOC analytical results for the groundwater samples. Samples were collected initially after the temporary well was installed and additional samples were collected for DNAPL evaluation. These samples were collected at various times depending upon field screening results, including 5 minutes after the initial sample was collected, after allowing potential DNAPL material to accumulate overnight, and up to 24 hours after installation. The samples collected from temporary wells AS2 through AS10 and 98A2 through 98A7 were analyzed by the on-site mobile laboratory and the results were evaluated in the field. The sample results from these various time intervals did not vary significantly. It was determined after the second day of groundwater sampling that samples would only be collected immediately after installation from that point on.

Similar to the findings of the soil investigation, there is a high concentration of TCA in the central portion of the ASA, in locations near the acid sump structure and in borings immediately adjacent to the former excavation area. The limits of the potential DNAPL source material in the ASA based on a 1 percent aqueous solubility of TCA (13,000 µg/L) are provided on Figure 8. The TCA concentration in the initial sample collected from AS7 was 14,000 µg/L, exceeding 1 percent of TCA solubility in water. Concentrations of TCA in the initial samples collected from AS2 and AS5 were 65,000 µg/L and 82,000 µg/L, respectively, exceeding 3 percent of TCA solubility. The initial sample collected from AS6 exhibited concentrations of TCA at 210,000 µg/L, exceeding 10 percent of TCA solubility. TCA concentrations did not vary greatly between samples collected when the boring was initially installed, and samples collected after the temporary well sat overnight and pooled DNAPL (if present) was allowed to accumulate at the base of the well.

The groundwater sample collected at AS9, immediately adjacent to the former excavation area, was also analyzed for the presence of sulfate and sodium. The sample was analyzed for these constituents since alkaline-activated persulfate had been added to the base of the excavation before the excavation area was backfilled, and the additional data may be required to vet potential remedial options for the ASA. Sulfate was reported at a concentration of 318 mg/L and sodium was reported at 162 mg/L (see Table 5).

### 4.2.2.2 PW-98A Assessment Area

Borings were advanced to determine the source of impacts to well PW-98A. Borings (98A2, 98A3, 98A4, 98A5 [TMW-10], 98A6 [TMW-11]) were advanced in a southeasterly direction, in the presumed upgradient direction from the well. The highest TCA concentrations were observed in well 98A5 with a TCA at a concentration of 1,300 µg/L. Based on this result, borings 98A6 and 98A7 were advanced further upgradient within the open storage area located east of the ASA (see Figure 7). Concentrations of TCA declined from those observed in 98A5 (1,300 µg/L) to 460 µg/L in 98A6 and an estimated concentration of 7.3 µg/L in boring 98A7, located the farthest upgradient. Based on these results, boring 98A5 and 98A6 were completed as wells TMW-10 and TMW-11, respectively.

## 4.3 Quality Control Samples

Quality control best practices were performed during sampling activities and as required by the *Quality Assurance Project Plan for Site-Wide Remedial Actions* (GSI, 2016). This included field duplicate sample collection and the analysis of laboratory method blanks.

For soil sampling, duplicate samples were collected from borings AS2-12.2-12.7, AS5-14-14.5, and AS6-16.7-17.3. The results are used to evaluate data variability representativeness of the primary sample within the investigation area. The relative standard deviation (RSD) for DCA was calculated for the primary and duplicate samples with concentrations above laboratory detection limits. The RSDs for DCA ranged from 15 percent to 89 percent. The large RSD value noted between sample AS5-14-14.5 (0.42 mg/kg) and AS5-14-14.5-DUP (estimated concentration of 0.16 mg/kg) of 89 percent is due to the low concentrations present and the variability of COC concentrations which are typically present in soils. The RSDs for chloroethane and VC could not be calculated since the resultant concentrations were below laboratory detection limits. The RSD for TCA was not calculated due to the large swings in concentrations due to the presumed presence of DNAPL droplets in the samples.

For groundwater sampling, duplicate samples were collected from temporary wells 98A7 during the initial sampling event, from AS3 during the 5-minute sample event, and from AS7 and AS9 during the overnight sampling event. The results were used to evaluate data variability representativeness of the primary sample within the investigation area. The RSDs for 1,2-dichloroethane, chloroethane, and vinyl chloride were calculated for the primary and duplicate samples with concentrations above laboratory detection limits. The RSDs for 1,2-dichloroethane ranged from 0 percent to 15 percent, the RSD for chloroethane for the primary and duplicates ranged from 10 percent to 12 percent, and the RSD for VC for the primary and duplicate samples ranged from 7 percent to 16 percent. The RSD for TCA was not calculated due to the large swings in concentrations due to the presumed presence of DNAPL droplets present in the samples.

Laboratory method blank sample results were non-detect for all soil and groundwater samples analyzed.

## Section 5: Summary and Conclusions

As outlined in Section 1.3, the objectives of the assessment were to determine the following:

- Determine the nature of the DNAPL material present in the ASA
- Determine the horizontal extent of DNAPL in the ASA
- Determine the source for CVOCs present in monitoring well PW-98A

Using real time data collection and evaluation techniques, the assessment was successful in addressing each of these issues as described below.

### 5.1 Nature of DNAPL in ASA

Assessment results provided information regarding the nature of DNAPL in the ASA:

- Nine temporary wells were installed and completed at the contact between the Linn Gravel and the underlying Spencer Formation where DNAPL accumulations have historically been encountered. The highest TCA concentrations were observed on the northern side of the former excavation area located adjacent to the acid sump, and on the western side of the investigation area at boring AS6. At this boring, TCA concentrations were measured as high as 210,000 µg/L, exceeding 10 percent of TCA aqueous solubility.
- Elevated TCA concentrations were confirmed using real time analytical data and free product was observed in groundwater samples using hydrophobic dye. The temporary wells were sampled at various time intervals, gauged for free product, and pumped at slow rates to recover free product pooled on the top of the Spencer Formation, if present. Despite groundwater concentrations ranging from 3 to 10 percent of the TCA aqueous solubility, no DNAPL was measured or purged at any of the temporary wells.
- Therefore, it was concluded that the DNAPL is present as dendritic accumulations and not as pooled material at the base of the Linn Gravel Formation. The largest accumulations of DNAPL are concentrated immediately adjacent to the acid sump and along the perimeter of the historic excavation area. This likely indicates that the bulk of source material was successfully removed during the excavation conducted in 2016.

### 5.2 Extent of DNAPL in ASA

Assessment results provided information regarding the extent of DNAPL in the ASA:

- The limits of the potential DNAPL source material in the ASA was delineated to 1 percent of the aqueous solubility of TCA (13,000 µg/L). The DNAPL material is limited to the ASA courtyard (Figure 8), and encircles the former excavation area immediately south of the acid sump.
- Of the nine temporary wells installed, four exhibited concentrations of TCA indicative of DNAPL. Concentrations in these temporary wells ranged from 14,000 µg/L (AS7) to 210,000 µg/L (AS6), exceeding 10 percent of TCA solubility. The remaining wells contained TCA at concentrations ranging from 12,000 µg/L in boring AS4, to 590 µg/L in boring AS8 located on the northern side of the acid sump structure.
- One boring (AS9) advanced immediately adjacent to the western wall of the former excavation exhibited TCA concentrations of 8,000 µg/L, below the threshold concentration indicative of DNAPL. Historic TCA concentrations at this location (IB-04) were three orders of magnitude higher in 2016. The lower concentrations observed at AS9 could be due the addition of persulfate in this area during excavation activities.

## 5.3 Source of PW-98A Impacts

Borings were advanced to determine the source of impacts to well PW-98A. Borings were advanced in a southeasterly direction, in the presumed upgradient direction from the well. The highest TCA concentration was observed in boring 98A5 (1,300 µg/L). Based on this result, borings 98A6 and 98A7 were advanced further upgradient within the open storage area located east of the ASA. Concentrations of TCA declined to 460 µg/L in 98A6 and an estimated concentration of 7.3 µg/L in boring 98A7, located the farthest upgradient.

Groundwater data obtained as part of the assessment indicates that the source of CVOC impact is likely due to releases in the open storage area located southeast of well PW-98A. Concentrations of TCA were elevated adjacent to this storage area, and declined to near detection limits at the upgradient edge of the storage area. Borings 98A5 and 98A6 were completed as wells TMW-10 and TMW-11, respectively, to evaluate conditions in this portion of the site over time.

## Section 6: References

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## Tables

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**Table 1. Temporary Boring Geologic Summary**

Acid Sump Area Source Assessment Report

ATI Millersburg Operations, Oregon

Temporary Boring	Total Depth (ft bgs)	Depth to Water (ft bgs)	Geologic Information					
			Asphalt/Concrete <sup>1</sup> (ft)	Fill <sup>1</sup> (ft)	Willamette Silt <sup>1</sup> (ft)	Linn Gravel <sup>1</sup> (ft)	Spencer Formation <sup>1</sup> (ft)	Linn Gravel Thickness (ft)
98A2	16.0	7.34	0	1.3	4.0	7.5	15.0	7.5
98A3	16.0	11.13	0	1.3	4.0	7.1	14.6	7.5
98A4	15.5	6.07	0	0.4	3.0	8.3	14.7	6.4
98A5	15.5	6.30	0	1.3	4.0	7.0	15.0	8.0
98A6	17.0	6.34	0	0.4	3.5	12.3	15.9	3.6
98A7	17.0	7.24	0	0.4	3.0	9.6	16.3	6.7
AS2	15.0	8.92	0	4.0	8.6	13.2	15.0	1.8
AS3	17.5	16.08	0	0.5	3.0	9.0	16.0	7.0
AS4	17.0	14.08	0	0.5	4.0	7.0	16.1	9.1
AS5	15.0	7.68	0	0.5	4.0	9.9	14.0	4.1
AS6	19.0	8.09	0	0.4	3.5	11.5	17.3	5.8
AS7	15.0	7.31	0	—	0.4	6.3	13.8	7.5
AS8	19.0	15.92	0	0.8	3.0	12.0	16.6	4.6
AS9	15.0	5.81	0	0.4	3.5	9.6	14.6	5.0
AS10	17.0	11.22	0	0.4	—	3.5	16.2	12.7

**Notes**<sup>1</sup> Depths are in feet and represent the top of each unit.

— = Unit was not encountered

ft = feet

ft bgs = feet below grade surface

**Table 2. Soil Photoionization Detector Readings**

Acid Sump Area Source Assessment Report

ATI Millersburg Operations, Oregon

Depth <sup>2</sup> (ft)	PID Readings <sup>1</sup> (ppm)														
	98A2	98A3	98A4	98A5	98A6	98A7	AS2	AS3	AS4	AS5	AS6	AS7	AS8	AS9	AS10
5	NR	NR	NR	0.2	2.1	38.9	NR	NR	NR	—	0.50	NR	0.2	0.2	NR
6	0.3	0.0	0.0	0.3	96.6	5.6	NR	6.3	NR	0.1 <sup>3</sup>	0.30	0.2	0.1	0.7	0.5
7	0.2	0.2	0.1	0.6	257.7	30.6	0.5	6.4	2.4	0.2	0.30	0.4	0.5	2.5	0.5
8	0.0	0.2	0.2	0.2	157.4	23.4	3.8	6.7	0.6	0.4	0.60	0.3	0.7	2.2	0.5
9	0.0	0.7	0.5	0.2	3.6	13.6	4.4	1.5	1.6	1.4	0.40	0.3	0.5	0.3	0.8
10	NR	NR	NR	NR	NR	NR	8.3	NR	NR	2.2	NR	NR	0.6	0.5	NR
11	NR	0.3	0.6	0.6	3.8	7.8	23.4	2.2	NR	17.9	2.10	0.5	0.5	0.7	NR
12	0.4	0.8	0.2	0.9	0.8	3.7	27.5	2.7	8.1	11.7	5.20	0.7	0.7	0.2	0.6
13	0.3	0.4	0.4	1.6	0.8	1.2	30.1	1.9	5.2	115.7	15.70	0.3	1.0	11.6	2.7
14	0.3	0.2	0.5	0.6	0.5	0.8	1.7	0.9	5.0	23.4	7.40	0.3	1.3	7.3	2.2
15	0.3	0.6	0.2	—	0.4	0.1	—	0.5	12.2	—	7.50	—	0.6	—	0.7
16	—	—	—	—	0.3	0.1	—	0.5	3.8	—	7.70	—	2.4	—	1.8
17	—	—	—	—	—	—	—	0.3	—	—	17.90	—	2.2	—	—
18	—	—	—	—	—	—	—	—	—	—	8.50	—	0.9	—	—

**Notes**<sup>1</sup> PID readings measured with an 11.7 eV lamp across a 1-foot interval.<sup>2</sup> Depth represents the top of each 1-foot interval.<sup>3</sup> PID reading measured across a 0.5-foot interval.

Hydrophobic dye tests and ultraviolet fluorescence yielded no results in each well.

— = not recorded due to encountering partially weathered rock and/or Spencer Formation

ft = feet

NR = no recovery

PID = photoionization detector

ppm = parts per million

**Table 3. Groundwater Field Parameters**

Acid Sump Area Source Assessment Report

ATI Millersburg Operations, Oregon

Temporary Well	Sample ID	Temperature (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation-Reduction Potential (mV)	Turbidity (NTU)	UV Fluorescence <sup>1</sup>	Hydrophobic Dye Test <sup>1</sup>	Notes (Clarity/Color/Sheen/Odor)
AS2	GW_AS2_initial	32.89	3,385	7.64	6.57	316.0	764	none	slight red hue	brown/clearing
	GW_AS2_overnight	20.70	2,244	0.78	8.99	11.1 (decreasing)	29	none	none	hard to tell if "slight" is still present due to increasing turbidity
AS3	GW_AS3_initial	29.08	5,998	8.85	8.51	-111.5	531	none	none	dark brown
	GW_AS3_5min	25.81	5,482	10.93	7.83	-142.5	453	none	none	dark brown
	GW_AS3_overnight	17.46	5,967	10.51	4.60	168.7	90	none	hint of red	clearing/brown/odor (unknown)
AS4	GW_AS4_initial	21.62	4,823	4.93	9.58	-242.9	1,000+	none	none	—
AS5	GW_AS5_initial	25.83	1,864	10.51	6.91	65.8	295	none	red hue	—
	GW_AS5_Bucket	—	—	—	—	—	—	none	red hue	—
	GW_AS5_overnight	17.84	2,261	7.58	9.08	189.1	652	none	slight red hue	dark brown, clearing
AS6	GW_AS6_initial	25.83	1,707	3.41	4.81	486.9	84	none	none	—
	GW_AS6_overnight	19.62	792	6.26	8.83	43.6	53	none	slight red hue	clear/no sheen/odor
AS7	GW_AS7_initial	29.42	2,382	3.20	5.17	164.7	1,000+	none	none	—
	GW_AS7_overnight	17.89	1,926	2.8 (decreasing)	9.41	64.2	1030	none	none	—
AS8	GW_AS8_initial	24.95	1,342	0.63	8.61	103.6 (decreasing)	1,000+	none	none	very turbid
AS9	GW_AS9_initial	28.85	1,408	1.16	7.35	361.4	175	none	none	—
	GW_AS9_overnight	18.68	1,414	10.78	10.33	-342	246	none	none	brown/clearing
AS10	GW_AS10_initial	27.73	495	1.93	9.16	292.6 (decreasing)	305	none	none	—
98A2	GW_98A2_initial	31.92	1,167	5.63	9.66	-356.6	1,000+	—	—	—
98A3	GW_98A3_initial	28.59	1,151	2.23	10.84	-616.3	1,000+	—	—	—
98A4	GW_98A4_initial	28.37	1,037	2.45	11.97 (decreasing)	-284.9 (decreasing)	1,000+	—	—	—
98A5	GW_98A5_initial	26.80	1,215	8.21 (decreasing)	10.94 (decreasing)	-229.1 (decreasing)	1,000+	—	—	—
98A6	GW_98A6_initial	24.06	1,011	2.82 (decreasing)	10.77 (decreasing)	-287.9 (decreasing)	1,000+	—	none	—
98A7	GW_98A7_initial	21.90	523	25.3	5.40	-15.1 (decreasing)	1,000+	—	—	very turbid

**Notes**<sup>1</sup> UV Fluorescence and hydrophobic dye tests were only performed in the Acid Sump Area, with the exception of a hydrophobic dye test performed at 98A6.

— = No data collected

°C = degrees Celsius

µS/cm = microsiemens per centimeter

mg/L = milligram per liter

mV = millivolt

NTU = nephelometric turbidity units

UV = ultraviolet

**Table 4. Soil Analytical Results<sup>1</sup>**

Acid Sump Area Source Assessment Report

ATI Millersburg Operations, Oregon

Temporary Boring	Sample ID	Sample Date	Depth Interval (ft bgs)	Analytical Laboratory <sup>2</sup>	1,1,1-Trichloroethane (mg/kg)	1,1,2-Trichloroethane (mg/kg)	1,1-Dichloroethane (mg/kg)	1,1-Dichloroethene (mg/kg)	Tetrachloroethene (mg/kg)	Trichloroethene (mg/kg)	Vinyl chloride (mg/kg)	Chloroethane (mg/kg)	cis-1,2-Dichloroethene (mg/kg)	1,2-Dibromoethane (mg/kg)	Isopropylbenzene (mg/kg)	tert-Butylbenzene (mg/kg)	sec-Butylbenzene (mg/kg)
<b>DEQ RBCs (Leaching to Groundwater, Occupational)</b>					<b>880</b>	<b>0.029</b>	<b>0.20</b>	<b>32</b>	<b>1.9</b>	<b>0.087</b>	<b>0.010</b>	<b>1,300</b>	<b>4.5</b>	<b>0.00056</b>	<b>NE</b>	<b>NE</b>	<b>NE</b>
98A2	98A2_8.0-9.0	7/22/2021	8 - 9	Apex	0.0092 U	0.0092 U	0.0092 U	0.0092 U	0.0092 U	0.0092 U	0.368 U	0.0092 U	0.0184 U	0.0184 U	0.0184 U	0.0184 U	
98A3	98A3_8.0-9.0	7/22/2021	8 - 9	Apex	0.0115 U	0.0115 U	0.0115 U	0.0115 U	0.0115 U	0.0115 U	0.461 U	0.0115 U	0.0231 U	0.0231 U	0.0231 U	0.0231 U	
98A4	98A4_8.0-9.0	7/22/2021	8 - 9	Apex	0.0103 U	0.0103 U	0.0103 U	0.0103 U	0.0103 U	0.0103 U	0.412 U	0.0103 U	0.0206 U	0.0206 U	0.0206 U	0.0206 U	
98A5	98A5_8.0-8.5	7/22/2021	8 - 8.5	Apex	0.00907 U	0.00907 U	0.00907 U	0.0130 J	0.00907 U	0.00907 U	0.363 U	0.00907 U	0.0181 U	0.0181 U	0.0181 U	0.0181 U	
	98A5_14.5-15.0	7/22/2021	14.5 - 15	Apex	0.0158 J	0.011 U	0.0248	0.119	0.0161 J	0.0920	0.441 U	0.0370	0.022 U	0.022 U	0.022 U	0.022 U	
98A6	98A6_7.0-8.0	7/22/2021	7 - 8	Libby	0.055	0.03 U	0.27	0.71	0.55	0.17	0.045	0.06 U	0.65	0.025	0.025	0.085	0.97
	98A6_15.9-16.4	7/22/2021	15.9 - 16.4	Apex	0.00934 U	0.00934 U	0.00934 U	0.0187 U	0.00934 U	0.00934 U	0.374 U	0.00934 U	0.0187 U	0.0187 U	0.0187 U	0.0187 U	
98A7	98A7_5.0-6.0	7/23/2021	5 - 6	Apex	0.0344	0.0103 U	0.134	0.457	0.137	0.0540	0.412 U	0.913	0.0206 U	0.0206 U	0.0206 U	0.0322 J	
AS2	AS2-12.2-12.7	7/20/2021	12.2 - 12.7	Libby	12	0.6 U	0.91	2.1	0.6 U	0.4 U	0.4 U	1.2 U	0.6 U	0.1 U	1.0 U	0.8 U	0.8 U
	AS2-12.2-12.7-Dup	7/20/2021	12.2 - 12.7	Libby	12	0.6 U	0.78	1.8	0.6 U	0.4 U	0.4 U	1.2 U	0.6 U	0.1 U	1.0 U	0.8 U	0.8 U
	AS2-12.7-13.2	7/21/2021	12.7 - 13.2	Libby	16	0.3 U	1.5	2.2	0.3 U	0.2 U	0.2 U	0.6 U	0.3 U	0.05 U	0.5 U	0.4 U	0.4 U
	AS2-13.2-13.7	7/20/2021	13.2 - 13.7	Libby	22	0.3 U	4.8	1.4	0.3 U	0.2 U	0.2 U	0.37	0.3 U	0.05 U	0.5 U	0.4 U	0.4 U
AS5	AS5-7-7.5	7/20/2021	7 - 7.5	Libby	0.019 J	0.03 U	0.03 U	0.05 U	0.03 U	0.02 U	0.02 U	0.06 U	0.03 U	0.005 U	0.1 U	0.04 U	0.04 U
	AS5-13-14	7/20/2021	13 - 14	Libby	18	1.2 U	1.3	0.89	1.2 U	0.8 U	0.8 U	2.4 U	1.2 U	0.2 U	2.0 U	1.6 U	1.6 U
	AS5-14-14.5	7/20/2021	14 - 14.5	Libby	12	0.3 U	0.42	0.5 U	0.3 U	0.2 U	0.2 U	0.6 U	0.3 U	0.05 U	0.5 U	0.4 U	0.4 U
	AS5-14-14.5-Dup	7/20/2021	14 - 14.5	Libby	1.3	0.3 U	0.16 J	0.5 U	0.3 U	0.2 U	0.2 U	0.6 U	0.3 U	0.05 U	0.5 U	0.4 U	0.4 U
AS6	AS6-16.1-16.7	7/20/2021	16.1 - 16.7	Libby	9.5	0.6 U	1.8	1.0	0.6 U	0.47	0.4 U	1.2 U	0.6 U	0.1 U	1.0 U	0.8 U	0.8 U
	AS6-16.7-17.3	7/20/2021	16.7 - 17.3	Libby	215 E	0.46	71	0.46	0.76	0.70	0.4 U	1.2 U	0.6 U	0.1 U	1.0 U	0.8 U	0.8 U
	AS6-16.7-17.3-Dup	7/22/2021	16.7 - 17.3	Libby	220 E	0.6 U	52	1.0 U	0.57	0.67	0.4 U	1.2 U	0.6 U	0.1 U	1.0 U	0.8 U	0.8 U
	AS6-17.3-17.8	7/20/2021	17.3 - 17.8	Libby	7.5	0.6 U	31	1.0 U	0.6 U	0.4 U	0.4 U	1.2 U	0.6 U	0.1 U	1.0 U	0.8 U	0.8 U

**Notes**<sup>1</sup> Only detected constituents are shown.<sup>2</sup> Apex sample results are estimated to be ~20-30% low without the dry weight correction (assuming the samples were normal moist, but not wet, samples).

DEQ RBC concentrations provided for reference only.

DEQ RBCs = Oregon Department of Environmental Quality, Risk-Based Concentrations for Individual Chemicals (May 2018)

E = Reported result is an estimate because it exceeds the calibration range.

ft bgs = feet below ground surface.

J = Analyte was positively identified. Reported result is an estimate.

mg/kg = milligrams per kilogram.

U = Analyte not detected above method reporting limit.

**Table 5. Groundwater Analytical Results<sup>1</sup>**

Acid Sump Area Source Assessment Report  
ATI Millersburg Operations, Oregon

Temporary Boring	Sample ID	Sample Date	Analytical Laboratory <sup>2</sup>	1,1,1-Trichloroethane (µg/L)	1,1,2-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	1,2-Dichloroethane (µg/L)	Chloroethane (µg/L)	Tetrachloroethene (µg/L)	Trichloroethene (µg/L)	1,1,1-Dichloroethene (µg/L)	cis-1,2-Dichloroethene (µg/L)	Vinyl chloride (µg/L)	Trichlorofluoromethane (µg/L)	Chloromethane (µg/L)	Sodium (mg/L)	Sulfate (mg/L)
AS2	GW_AS2_initial	7/20/2021	Libby	65,000 E	200 U	11,000	200 U	1,600	200 U	320	13,000	200 U	220	400 U	400 U	—	—
	GW_AS2_overnight	7/21/2021		67,000 E	200 U	14,000	200 U	3,500	200 U	310	14,000	200 U	300	400 U	400 U	—	—
AS3	GW_AS3_initial	7/19/2021	Libby	70	10 U	950	10 U	3,400	10 U	11	160	10 U	13	20 U	20 U	—	—
	GW_AS3_5min	7/19/2021		60	20 U	860	20 U	2,600	20 U	13	180	20 U	13	40 U	40 U	—	—
	GW_AS3_5min-Dup	7/19/2021		68	20 U	860	20 U	2,900	20 U	8.0 U	170	20 U	14	40 U	40 U	—	—
	GW_AS3_overnight	7/20/2021		15 J	20 U	380	20 U	1,700	20 U	8.0 U	50	20 U	5.8	40 U	40 U	—	—
	GW-Dup-10-0721	7/20/2021		19 J	20 U	280	20 U	3,800	20 U	8.0 U	100	20 U	8.2	40 U	40 U	—	—
AS4	GW_AS4_initial	7/22/2021	Libby	12,000 E	63	35,000 E	140	18,000 E	59	340	9,700	140	990	100 U	100 U	—	—
	GW-Dup-3-0721	7/22/2021		12,000 E	110	36,000 E	140	28,000 E	95	340	9,800	130	1000	100 U	100 U	—	—
AS5	GW_AS5_initial	7/20/2021	Libby	82,000	200 U	14,000	200 U	460	200 U	800	27,000	200 U	460	400 U	400 U	—	—
	GW_AS5_bucket	7/20/2021		56,000	500 U	6,300	500 U	1,000 U	500 U	290	8,100	500 U	100 U	1,000 U	1,000 U	—	—
	GW_AS5_overnight	7/21/2021		140,000 E	500 U	20,000	500 U	1,000 U	500 U	650	16,000	500 U	100 U	1,000 U	680	—	—
AS6	GW_AS6_initial	7/20/2021	Libby	210,000	500 U	39,000	500 U	1,000 U	500 U	200 U	4,700	500 U	100 U	1,000 U	1,000 U	—	—
	GW_AS6_overnight	7/21/2021		120,000 E	500 U	25,000	500 U	1,000 U	500 U	350	2,300	500 U	100 U	1,000 U	1,000 U	—	—
AS7	GW_AS7_initial	7/20/2021	Libby	14,000	500 U	5,000	500 U	1,000 U	500 U	200 U	5,400	500 U	100 U	1,000 U	1,000 U	—	—
	GW_AS7_overnight	7/21/2021		9,600	500 U	3,400	500 U	1,000 U	500 U	200 U	4,000	500 U	100 U	1,000 U	1,000 U	—	—
	GW_AS7_overnight_Dup	7/21/2021		9,900	500 U	3,200	500 U	1,000 U	500 U	200 U	3,600	500 U	100 U	1,000 U	1,000 U	—	—
AS8	GW_AS8_initial	7/21/2021	Libby	590	100 U	3,100	100 U	200 U	100 U	40 U	300	100 U	20	200 U	200 U	—	—
AS9	GW_AS9_initial	7/21/2021	Libby, Apex <sup>2</sup>	8,000	500 U	3,900	500 U	1,000 U	500 U	200 U	4,100	500 U	200	1,000 U	1,000 U	162	318
	GW_AS9_overnight	7/22/21 (Libby) 7/23/21 (Apex)		5,900	100 U	4,100	100 U	370	100 U	40 U	3,000	100 U	170	200 U	200 U	—	—
	GW_AS9_overnight-Dup	7/22/2021		8,900	100 U	4,800	100 U	420	100 U	40 U	4,600	100 U	200	200 U	200 U	—	—
AS10	GW_AS10_initial	7/21/2021	Libby	340	20 U	1,400	20 U	54	20 U	8 U	330	20 U	13	40 U	40 U	—	—
	GW-Dup-2-0721	7/21/2021		360	20 U	1,500	20 U	64	20 U	8 U	370	20 U	15	40 U	40 U	—	—
98A2	GW_98A2_initial	7/22/2021	Libby	130	20 U	300	20 U	22	56	110	670	170	190	40 U	40 U	—	—
98A3	GW_98A3_initial	7/22/2021	Libby	170	20 U	115	20 U	40 U	35	64	330	20 U	18	40 U	40 U	—	—
98A4	GW_98A4_initial	7/22/2021	Libby	190	20 U	200	20 U	40 U	150	66	490	180	11	40 U	40 U	—	—
98A5	GW_98A5_initial	7/22/2021	Libby	1,300	100 U	780	100 U	390	100 U	420	1,600	270	52	200 U	200 U	—	—
98A6	GW_98A6_initial	7/22/2021	Libby	460	20 U	130	20 U	40 U	68	280	610	280	51	64	40 U	—	—
98A7	GW_98A7_initial	7/23/2021	Libby	7.3 J	0.6 U	20	0.6 U	1.2 U	11	15	70	0.6 U	0.4 U	1.0 U	1.2 U	—	—
	GW_98A7_initial-Dup	7/23/2021		8.8	20 U	22	20 U	40 U	17	14	68	20 U	4.0 U	40 U	40 U	—	—
	GW-Dup-4-0721	7/23/2021		6.0 J	20 U	23	20 U	40 U	8.7	13	87	20 U	4.0 U	40 U	40 U	—	—

**Notes**<sup>1</sup> Only detected constituents are shown.<sup>2</sup> Sodium and sulfate were analyzed by Apex Laboratories, LLC. All other constituents were analyzed by Libby Environmental.

— = not analyzed.

µg/L = micograms per liter

E = Reported result is an estimate because it exceeds the calibration range.

J = Analyte was positively identified. Reported result is an estimate.

mg/L = milligrams per liter

U = Analyte not detected above method reporting limit.

1,1,1-Trichloroethane concentration meets or exceeds 1% of effective solubility (13,000 µg/L)

1,1,1-Trichloroethane concentration meet or exceeds 3% of effective solubility (39,000 µg/L)

1,1,1-Trichloroethane concentration meets or exceeds 10% of effective solubility (130,000 µg/L)

Effective solubility concentrations for 1,1,1-Trichloroethane were obtained from the Environmental Protection Agency's Regional Screening Level - Generic Tables, Chemical Specific Parameters (May 2021)

GW-Dup-X-XXXX Indicates laboratory duplicate.

GW\_Sample\_X\_Dup = Field duplicate sample

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## Figures

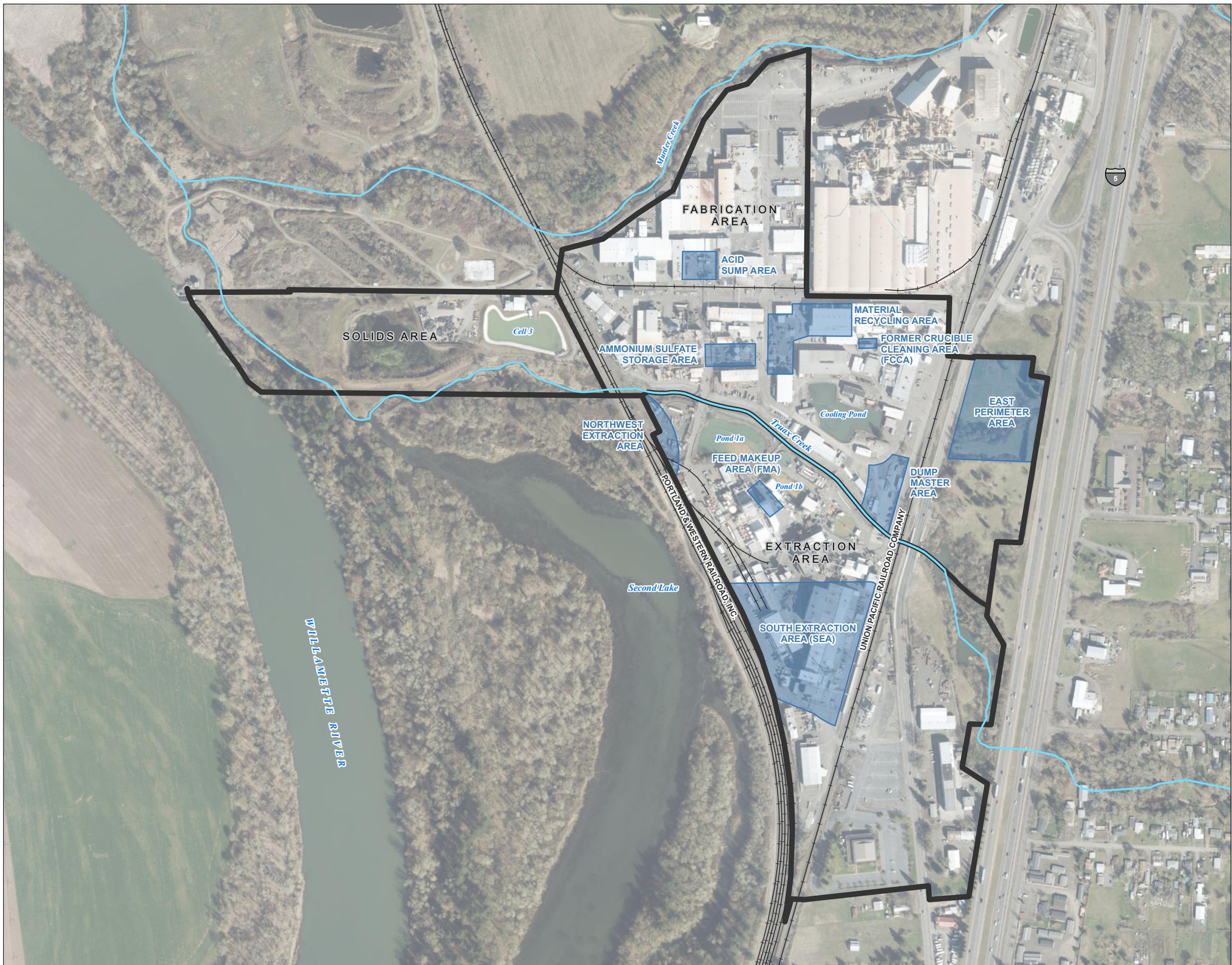
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**FIGURE 1**

**Millersburg Operations**

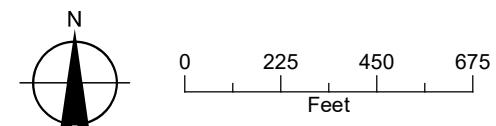
**Main Plant and Solids Area**

**ATI Millersburg Operations, Oregon**



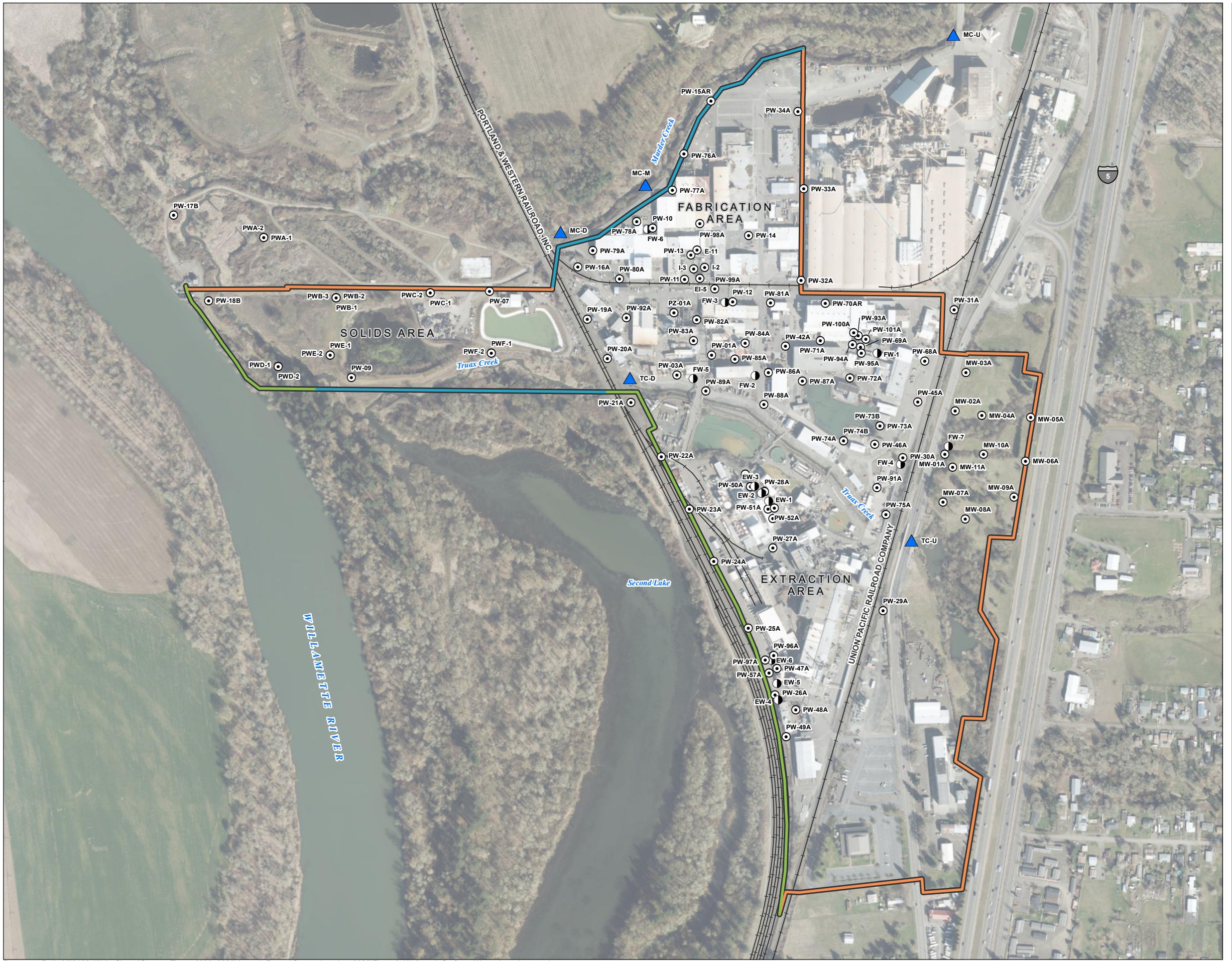
**LEGEND**

- Watercourse
- Boundary
- Remediation Subarea
- Railroad



Date: March 18, 2021

Data Sources: Linn Co., ESRI, Digiglobe 2018



## FIGURE 2

## **Well and Surface Water Locations in the Main Plant and Solids Area**

## **LEGEND**

- Monitoring Well
  - Extraction Well
  - ▲ Surface Water Sample Location

## Property Boundary

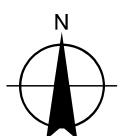
- AWQC for Aquatic Receptors
  - AWQC for Human Health and Fish Consumption
  - Groundwater MCL

## All Other Features

- +— Railroad

## NOTES

AWQC: Ambient Water Quality Criteria, Oregon  
Department of Environmental Quality  
MCL: Maximum Contamination Level, U.S.  
Environmental Protection Agency's Drinking Water  
Regulation

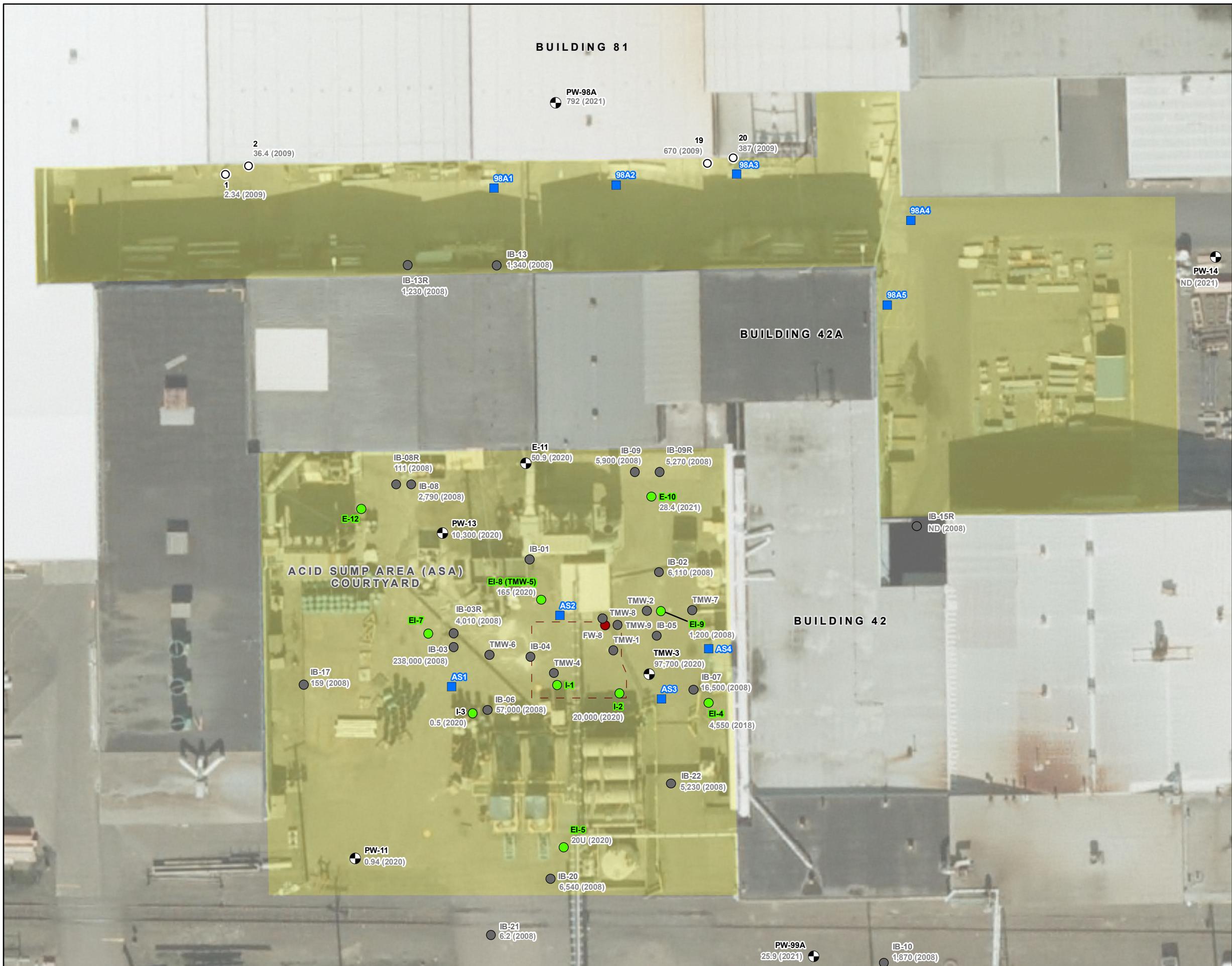


A horizontal number line starting at 0 and ending at 675. There are tick marks at 0, 225, 450, and 675. The word "Feet" is written below the line.



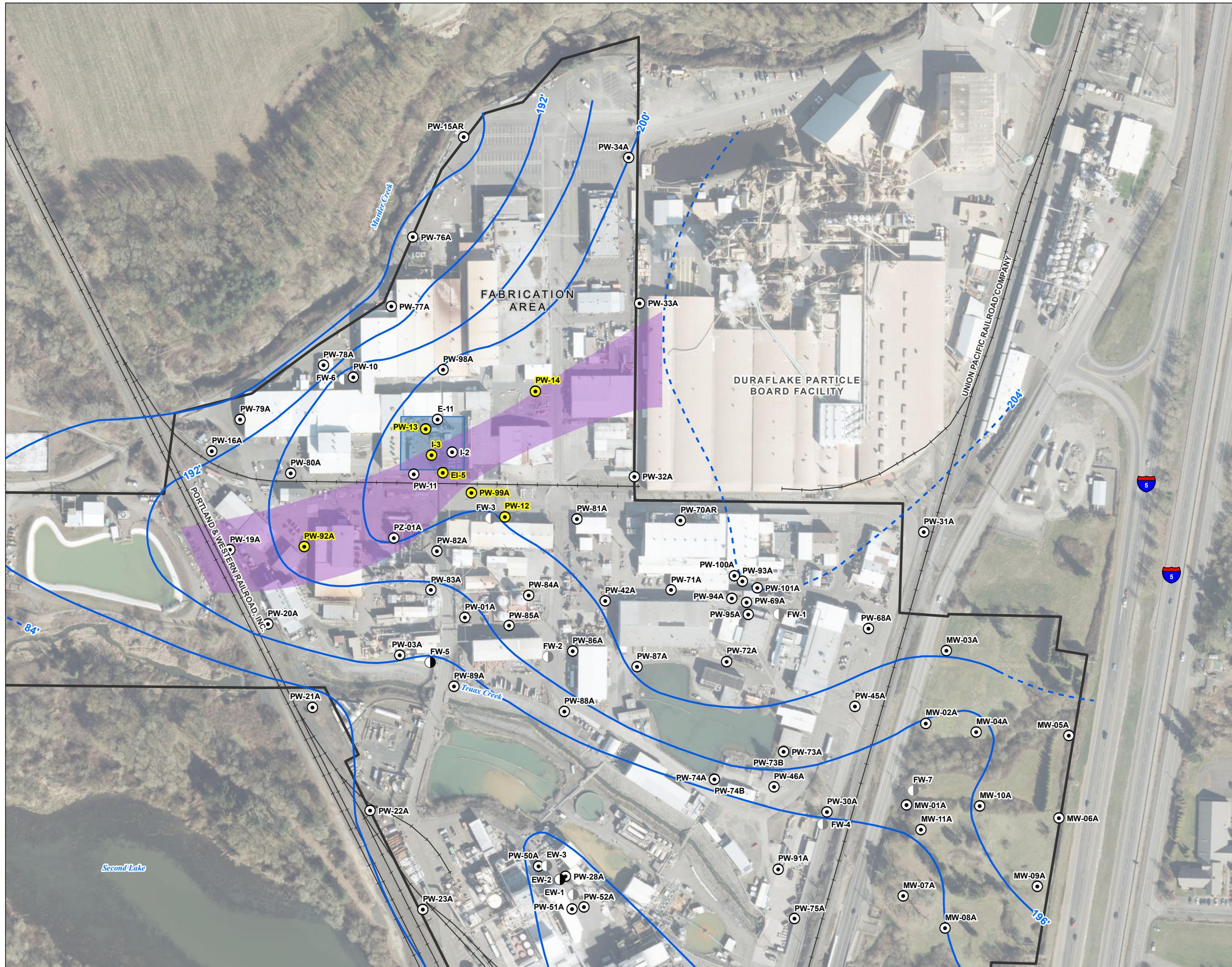
**FIGURE 3**

**Proposed Areas for Additional Exploration with TCA Groundwater Concentrations**  
**ATI Millersburg Operations, Oregon**



**FIGURE 4**

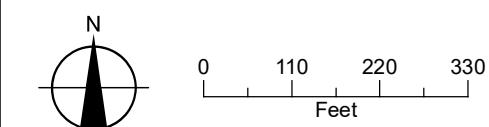
**Transducer Locations  
(Fall 2020 Groundwater Elevations)**  
**ATI Millersburg Operations, Oregon**

**LEGEND**

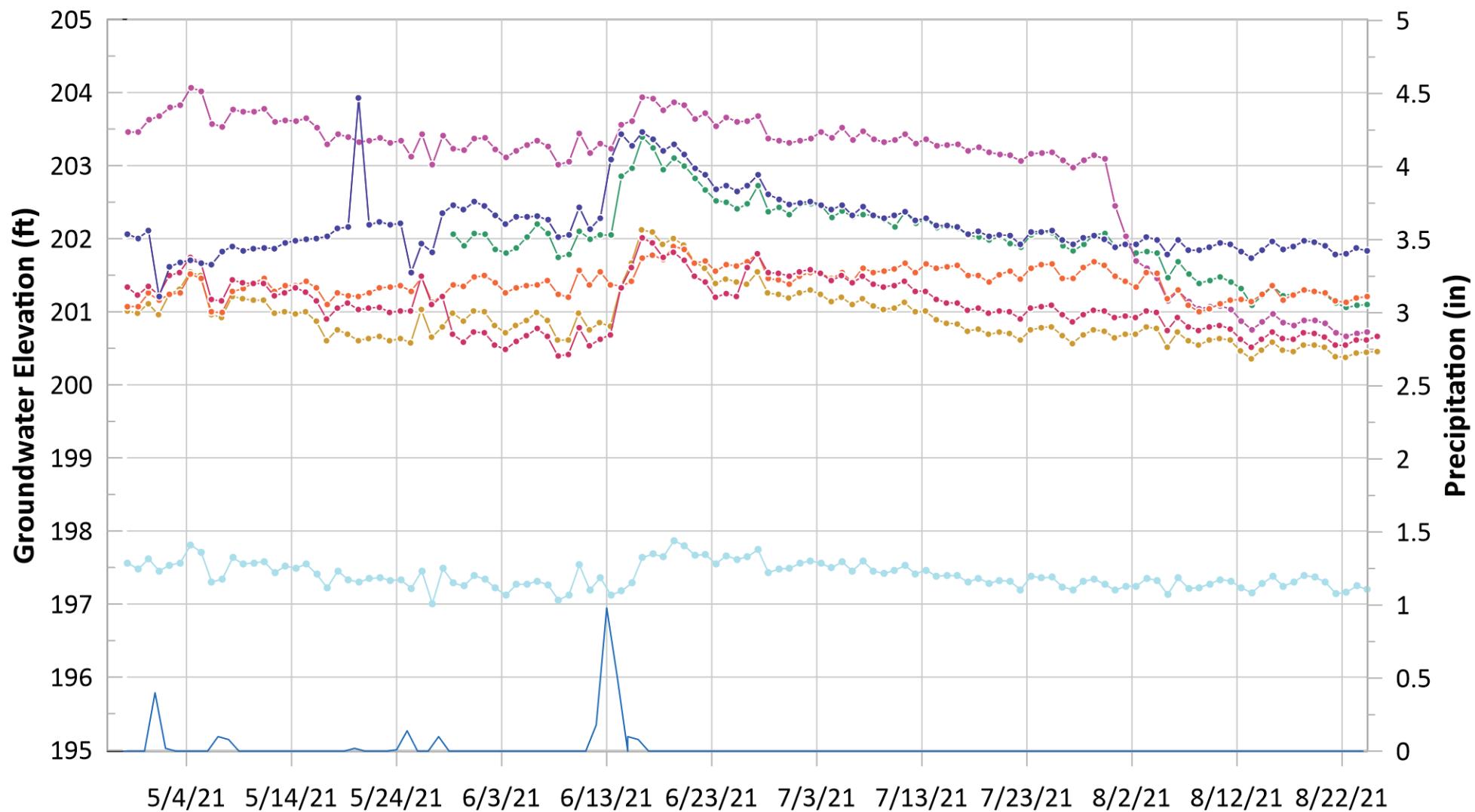
- Monitoring Well with Transducer Placement
- Monitoring Well
- Extraction Well
- Extraction Well, Inactive
- Fall 2020 Linn Gravel Groundwater Contour (dashed where inferred)
- Historic Shift in Groundwater Divide, 2017 - June 2021
- Acid Sump Area
- All Other Features**
  - Property Boundary
  - Railroad

**NOTE**

- The following Linn Gravel monitoring wells were not used for contouring:
  - FW-6 is used for contouring instead of PW-10 at EPA's request.
  - PW-48A is a shallow well. The bottom of the screen (19.6') is above the static water level at other nearby Extraction Area wells.
  - PW-69A is 3 feet from an outdoor freshwater spraying station that operates 24 hours a day and may leak through cracks in concrete pads.
  - PW-72A, PW-73A, and PW-74A are likely hydraulically connected to the cooling pond.



## Combined Hydrographs



### Legend:

- PW\_92a\_Water\_Level\_Elevation\_feet
- El\_5\_Water\_Level\_Elevation\_feet
- I\_3\_Water\_Level\_Elevation\_feet
- PW\_12\_Water\_Level\_Elevation\_feet
- PW\_13\_Water\_Level\_Elevation\_feet
- PW\_99a\_Water\_Level\_Elevation\_feet
- PW\_14\_Water\_Level\_Elevation\_feet
- Precipitation

**Notes:**  
Precipitation data was sourced from the Oregon State University Hyslop weather station located in Corvallis, Oregon.  
Precipitation includes rain and/or snow melt.

**FIGURE 5**  
**Combined Hydrographs with Precipitation**  
ATI Millersburg Operations, Oregon

**FIGURE 6**

**1,1,1-Trichloroethane and Breakdown Products  
Soil Concentrations**

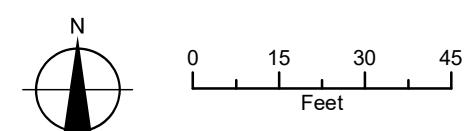
*ATI Millersburg Operations, Oregon*

**LEGEND**

- Boring Location
- TCA Concentrations in mg/kg
- DCA Concentrations in mg/kg
- Chloroethane Concentrations in mg/kg
- - - Excavation Boundary
- General Boring Investigation Area

**NOTES**

DCA: 1,1-Dichloroethane  
TCA: 1,1,1-trichloroethane  
mg/kg: milligrams per kilogram  
U: Result not detected,  
result reported at reporting limit.  
J: The reported result is an estimate.  
The value is less than the minimum calibration level  
but greater than the estimated detection limit.



**FIGURE 7**
**Groundwater Results -  
1,1,1-Trichloroethane and  
Daughter Products**

ATI Millersburg Operations, Oregon

**NOTES**

13,000 µg/L = 1% TCA DNAPL Concentration

DCA: 1,1-Dichloroethane

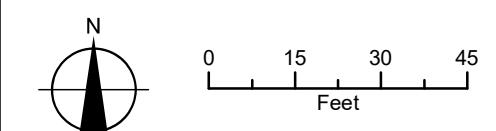
TCA: 1,1,1-trichloroethane

µg/L: micrograms per liter

U: The analyte was not detected in the sample at the estimated detection limit.

J: The reported result is an estimate. The value is less than the minimum calibration level but greater than the estimated detection limit.

E: Exceeds calibration range.



**FIGURE 8**
**Horizontal Limit of DNAPL**  
**ATI Millersburg Operations, Oregon**


## **APPENDIX A**

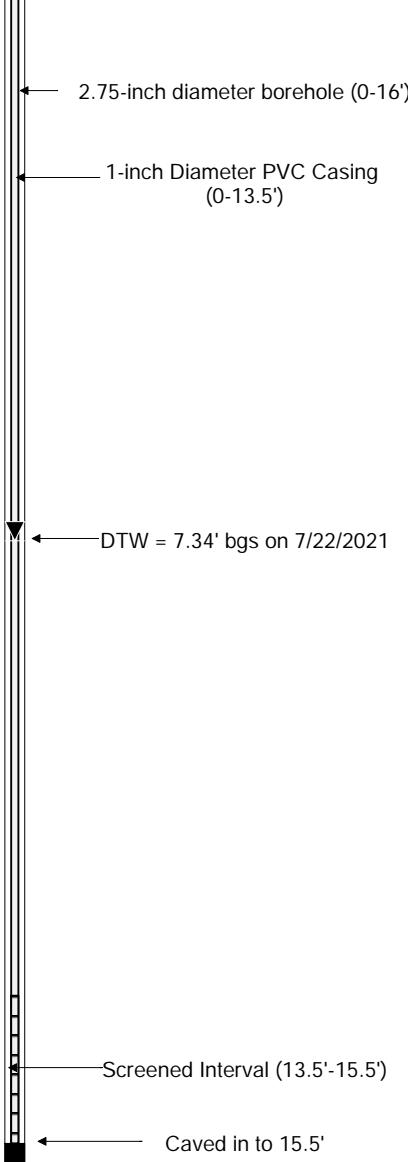
Boring Logs

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**GSI** Water Solutions, Inc.

**LOG ID: 98a2**

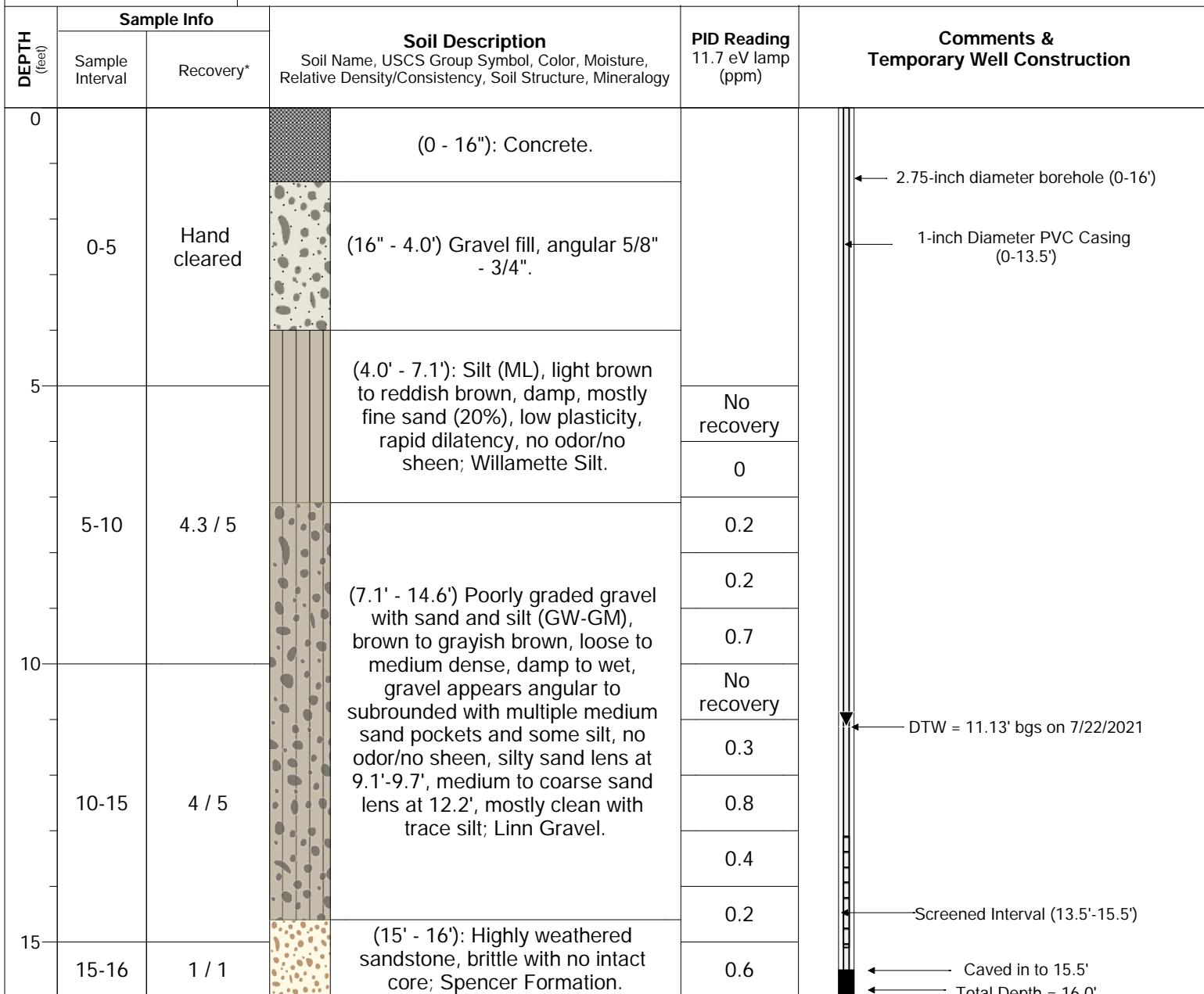
CLIENT/PROJECT:			Acid Sump DNAPL Assessment			GROUND SURFACE ELEVATION AND DATUM: Unknown			
BORING LOCATION:			ATI Millersburg Operations			TOTAL DEPTH (ft): 16		DATE STARTED: 7/22/2021	
DRILLING CONTRACTOR:			Cascade Drilling			LOGGED BY: J. Sherrod		DATE FINISHED: 7/22/2021	
SAMPLING METHOD:			Dual Tube Soil Sleeve			DEPTH TO WATER (ft bgs)	FIRST: 7.34	COMPLETED: 7.34	
DRILLING METHOD:		Geoprobe 3230DT Track Rig							
DEPTH (feet)	Sample Info		Soil Description		PID Reading 11.7 eV lamp (ppm)	Comments & Temporary Well Construction			
0	Sample Interval	*Recovery	Soil Name, USCS Group Symbol, Color, Moisture, Relative Density/Consistency, Soil Structure, Mineralogy						
0	0-5	Hand cleared		(0 - 16"): Concrete.  (16" - 4.0') Gravel fill.	11.7 eV lamp (ppm)				
5				(4.0' - 7.5'): Silt (ML), gray to brownish-gray, damp, soft to medium stiff, mostly silt with 10-15% fine sand intermixed, red staining (Fe?) in vertical lines, low-medium plasticity, rapid dilatancy, no odor/no sheen; Willamette Silt					
5	5-10	2.7 / 5							
7.5						No recovery			
10						0.3			
12.5						0.2			
15						0			
15	15-16	1 / 1		(15' - 16'): Highly weathered sandstone, brittle, low density, no odor/no sheen; Spencer Formation.		0			
16				0.3					
<p>*Lab Sample Intervals: 8 - 9' (vadose)  UV Fluorescence and Hydrophobic Dye Test yielded no results</p> 									



**GSI** Water Solutions, Inc.

**LOG ID: 98a3**

<b>CLIENT/PROJECT:</b>	Acid Sump DNAPL Assessment	<b>GROUND SURFACE ELEVATION AND DATUM:</b> Unknown		
<b>BORING LOCATION:</b>	ATI Millersburg Operations		<b>TOTAL DEPTH (ft):</b> 16	<b>DATE STARTED:</b> 7/22/2021
<b>DRILLING CONTRACTOR:</b>	Cascade Drilling		<b>LOGGED BY:</b> J. Sherrod	<b>DATE FINISHED:</b> 7/22/2021
<b>SAMPLING METHOD:</b>	Dual Tube Soil Sleeve		<b>DEPTH TO WATER (ft bgs)</b> 11.13	<b>FIRST:</b> 11.13 <b>COMPLETED:</b> 11.13
<b>DRILLING METHOD:</b>	Geoprobe 3230DT Track Rig			



\*Lab Sample Interval: 8 - 9' (vadose)

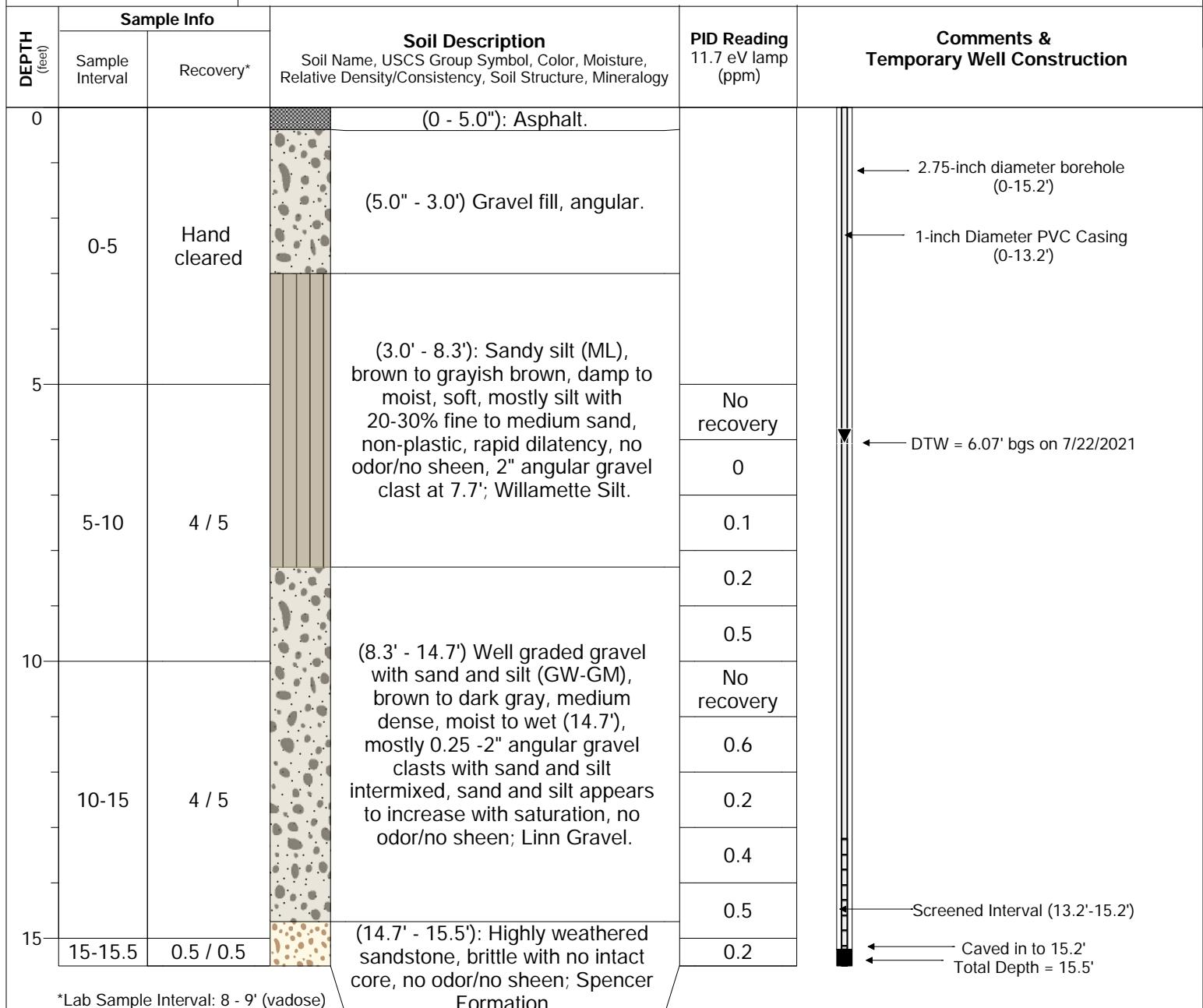
UV Fluorescence and Hydrophobic Dye Test yielded no results



**GSI** Water Solutions, Inc.

**LOG ID: 98a4**

<b>CLIENT/PROJECT:</b>	Acid Sump DNAPL Assessment	<b>GROUND SURFACE ELEVATION AND DATUM:</b> Unknown		
<b>BORING LOCATION:</b>	ATI Millersburg Operations		<b>TOTAL DEPTH (ft):</b> 15.5	<b>DATE STARTED:</b> 7/22/2021
<b>DRILLING CONTRACTOR:</b>	Cascade Drilling		<b>LOGGED BY:</b> J. Sherrod	<b>DATE FINISHED:</b> 7/22/2021
<b>SAMPLING METHOD:</b>	Dual Tube Soil Sleeve		<b>DEPTH TO WATER (ft bgs)</b> 6.07	<b>FIRST:</b> 6.07 <b>COMPLETED:</b> 6.07
<b>DRILLING METHOD:</b>	Geoprobe 3230DT Track Rig			



\*Lab Sample Interval: 8 - 9' (vadose)

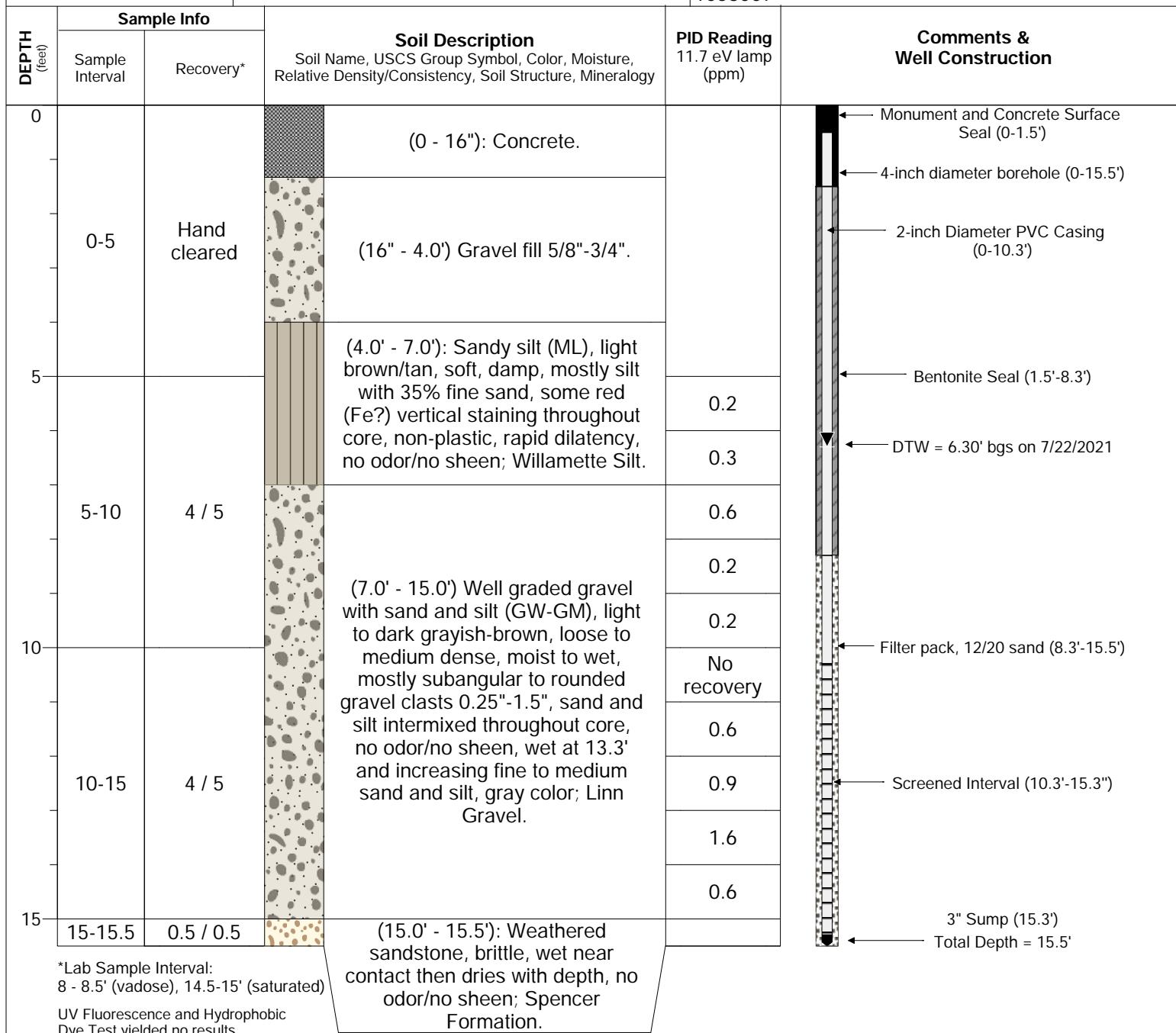
UV Fluorescence and Hydrophobic Dye Test yielded no results



**GSI** Water Solutions, Inc.

**LOG ID: 98a5 (TMW-10)**

<b>CLIENT/PROJECT:</b>	Acid Sump DNAPL Assessment			<b>GROUND SURFACE ELEVATION AND DATUM:</b> Unknown		
<b>BORING LOCATION:</b>	ATI Millersburg Operations			<b>TOTAL DEPTH (ft):</b> 15.5	<b>DATE STARTED:</b> 7/22/2021	
<b>DRILLING CONTRACTOR:</b>	Cascade Drilling			<b>LOGGED BY:</b> J. Sherrod	<b>DATE FINISHED:</b> 7/23/2021	
<b>SAMPLING METHOD:</b>	Dual Tube Soil Sleeve			<b>DEPTH TO WATER (ft bgs)</b> 6.3	<b>FIRST:</b> 6.3	<b>COMPLETED:</b> 6.3
<b>DRILLING METHOD:</b>	Geoprobe 3230DT Track Rig			<b>START CARD:</b> 1053007		



\*Lab Sample Interval:  
8 - 8.5' (vadose), 14.5-15' (saturated)

UV Fluorescence and Hydrophobic Dye Test yielded no results



**GSI** Water Solutions, Inc.

**LOG ID: 98a6 (TMW-11)**

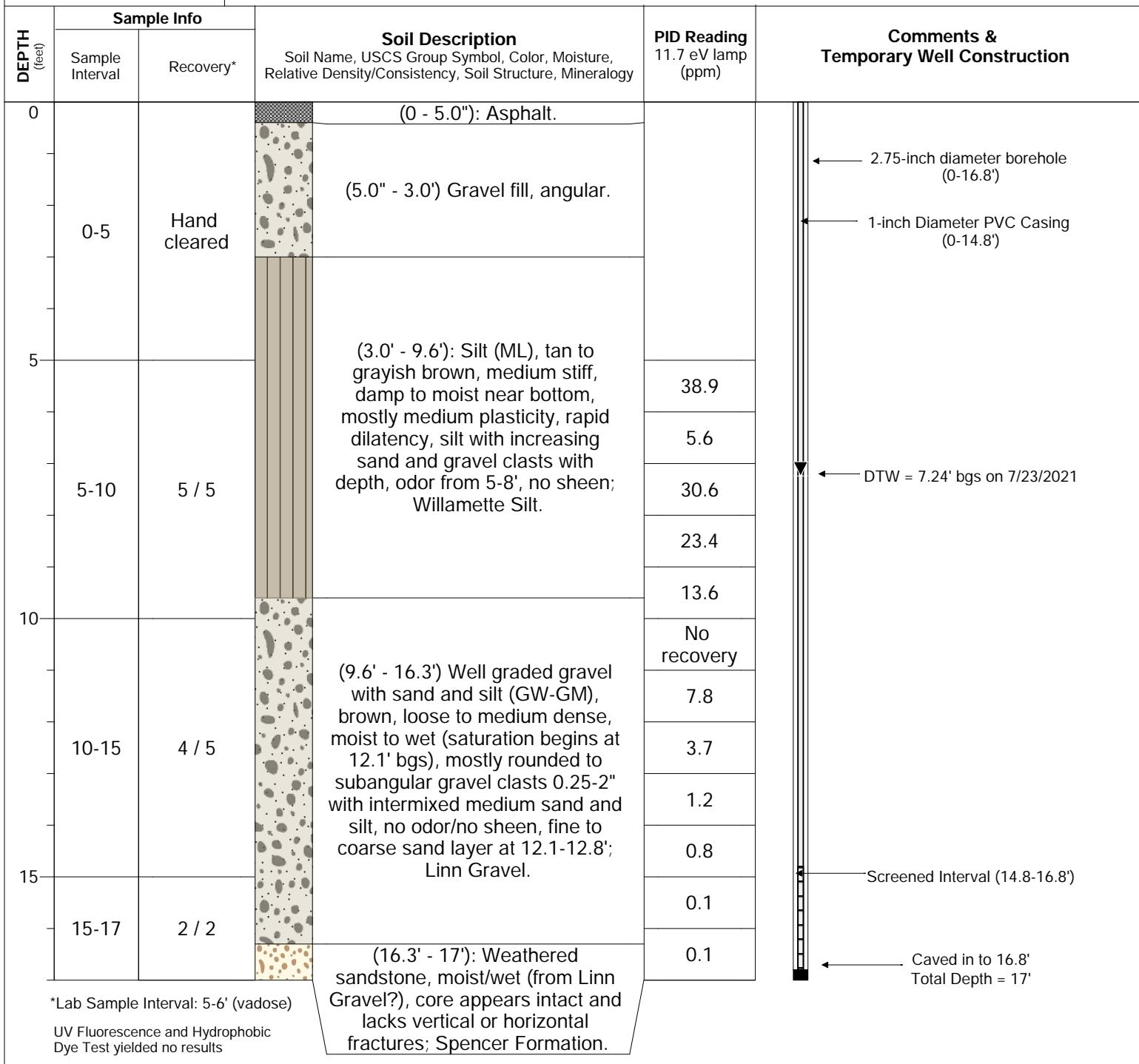
CLIENT/PROJECT:			Acid Sump DNAPL Assessment			GROUND SURFACE ELEVATION AND DATUM: Unknown		
BORING LOCATION:			ATI Millersburg Operations			TOTAL DEPTH (ft): 17		DATE STARTED: 7/22/2021
DRILLING CONTRACTOR:			Cascade Drilling			LOGGED BY: J. Sherrod		DATE FINISHED: 7/23/2021
SAMPLING METHOD:			Dual Tube Soil Sleeve			DEPTH TO WATER (ft bgs)	FIRST: 6.34	COMPLETED: 6.34
DRILLING METHOD:			Geoprobe 3230DT Track Rig			START CARD: 1053005		
DEPTH (feet)	Sample Info		Soil Description Soil Name, USCS Group Symbol, Color, Moisture, Relative Density/Consistency, Soil Structure, Mineralogy	PID Reading 11.7 eV lamp (ppm)	Comments & Temporary Well Construction			
	Sample Interval	Recovery*						
0			(0 - 5.0"): Asphalt.					
0-5	Hand cleared		(5.0" - 3.5') 3/8-3/4" gravel fill.					
5								
5-10	5 / 5		(3.5' - 12.3'): Silt (ML), gray to light brown, damp to moist, soft to medium stiff, mostly silt with fine to medium sand increasing with depth, medium plasticity, high dilatancy, solvent-like odor from 6.0'-9.0', fine sand at 8.7'-8.9' and 9.8'-10'; Willamette Silt.	2.1				
10				96.6				
10-15	3.7 / 5		(12.3' - 15.9') Well graded gravel with sand and silt (GW-GM), brown, medium dense, moist to wet, gravel appears .25-2" rounded to subangular, minor sandy silt zones throughout, no odor/no sheen, poorly graded rounded gravel at 15.7'; Linn Gravel.	257.7				
15				157.4				
15-17	2 / 2		(15.7' - 17.0'): Highly weathered sandstone, brittle with no intact core, no odor/no sheen; Spencer Formation.	3.6				
				No recovery				
				3.8				
				0.8				
				0.8				
				0.5				
				0.4				
				0.3				
<p>The diagram illustrates the temporary well construction. It shows a vertical borehole with a 4-inch diameter. Inside the borehole is a 2-inch diameter PVC Casing, sealed with a Bentonite Seal between depths of 1.5' and 9.5'. A Filter pack, consisting of 12/20 sand, is positioned between 9.5' and 16.5'. The screened interval is located between 11.5' and 16.5'. At the bottom, there is a 3" Sump (16.8') with a total depth of 17.0'. Arrows point from the labels to their respective parts in the diagram.</p>								
<p>*Lab Sample Interval: 7-8', 15.9-16.4'</p> <p>UV Fluorescence and Hydrophobic Dye Test yielded no results</p>								



Water Solutions, Inc.

**LOG ID: 98a7**

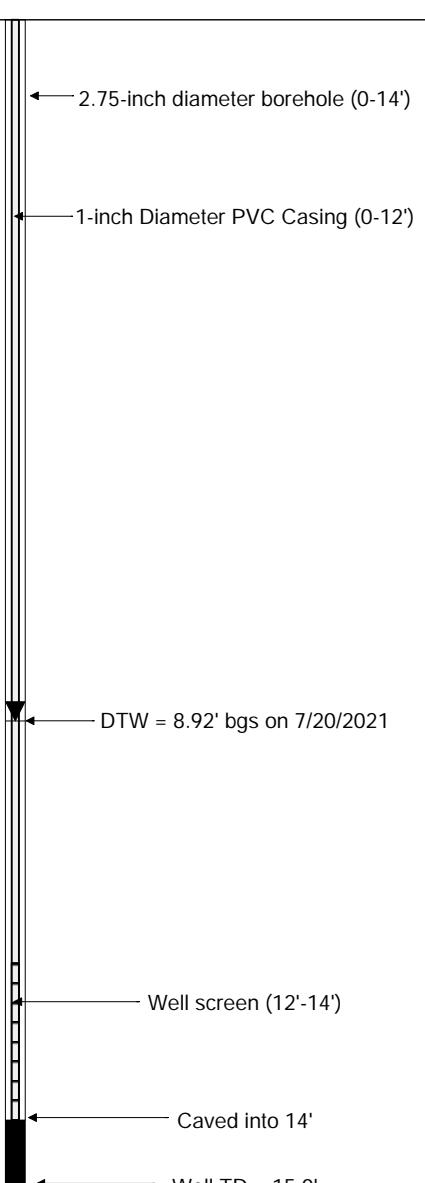
<b>CLIENT/PROJECT:</b>	Acid Sump DNAPL Assessment	<b>GROUND SURFACE ELEVATION AND DATUM:</b> Unknown		
<b>BORING LOCATION:</b>	ATI Millersburg Operations	<b>TOTAL DEPTH (ft):</b> 17	<b>DATE STARTED:</b> 7/23/2021	
<b>DRILLING CONTRACTOR:</b>	Cascade Drilling	<b>LOGGED BY:</b> J. Sherrod	<b>DATE FINISHED:</b> 7/23/2021	
<b>SAMPLING METHOD:</b>	Dual Tube Soil Sleeve	<b>DEPTH TO WATER (ft bgs)</b> 7.24	<b>FIRST:</b> 7.24	<b>COMPLETED:</b> 7.24
<b>DRILLING METHOD:</b>	Geoprobe 3230DT Track Rig			





**GSI** Water Solutions, Inc.

**LOG ID: AS2**

CLIENT/PROJECT: Acid Sump DNAPL Assessment			GROUND SURFACE ELEVATION AND DATUM: Unknown		
BORING LOCATION: ATI Millersburg Operations			TOTAL DEPTH (ft): 15		DATE STARTED: 7/20/2021
DRILLING CONTRACTOR: Cascade Drilling			LOGGED BY: J. Sherrod		DATE FINISHED: 7/21/2021
SAMPLING METHOD: Dual Tube Soil Sleeve			DEPTH TO WATER (ft bgs)	FIRST: 8.92	COMPLETED: 8.92
DRILLING METHOD: Geoprobe 3230DT Track Rig					
DEPTH (feet)	Sample Info		Soil Description	PID Reading 11.7 eV lamp (ppm)	Comments & Temporary Well Construction
0					
0-5	Hand cleared		(0 - 4'): Asphalt		 2.75-inch diameter borehole (0-14') 1-inch Diameter PVC Casing (0-12')
5					
5-10	2.5 / 5		(4.0' - 8.6'): Fill material, medium gravel, well-graded sand, some silt and a few large 0.75-3" angular cobbles, perched groundwater entering boring at 4.0' feet bgs; Fill.	No recovery	
10				No recovery	
10-15	5 / 5		(8.6' - 13.2'): Well-graded gravel with silt and sand (GW-GM), gray to brownish-gray, damp to wet, mostly fine to coarse gravel (sub-rounded to angular) with intermixed silt and fine sand, wet at 11.0' bgs, perched groundwater skewing water table determination; Linn Gravel.	0.5	
15			(13.2'-15'): Weathered sandstone, bluish-gray, no sheen or odor, appears very dense at upper contact with gravel, sandstone density increases with depth; Spencer Formation.	3.8	DTW = 8.92' bgs on 7/20/2021
				4.4	
				8.3	
				23.4	
				27.5	Well screen (12'-14')
				30.1	Caved into 14'
				1.7	Well TD = 15.0'

\*Lab Sample Intervals:  
12.2-12.7', 12.7-13.2', 13.2-13.7'  
UV Fluorescence and Hydrophobic  
Dye Test yielded no results



**GSI** Water Solutions, Inc.

**LOG ID: AS3**

CLIENT/PROJECT:			Acid Sump DNAPL Assessment		GROUND SURFACE ELEVATION AND DATUM: Unknown					
BORING LOCATION:			ATI Millersburg Operations		TOTAL DEPTH (ft): 17.5		DATE STARTED: 7/19/2021			
DRILLING CONTRACTOR:			Cascade Drilling		LOGGED BY: J. Sherrod		DATE FINISHED: 7/20/2021			
SAMPLING METHOD:			Dual Tube Soil Sleeve		DEPTH TO WATER (ft bgs)	FIRST: 16.08	COMPLETED: 16.08			
DRILLING METHOD:			Geoprobe 3230DT Track Rig							
DEPTH (feet)	Sample Info		Soil Description Soil Name, USCS Group Symbol, Color, Moisture, Relative Density/Consistency, Soil Structure, Mineralogy	PID Reading 11.7 eV lamp (ppm)	Comments & Temporary Well Construction					
	Sample Interval	*Recovery								
0	Hand cleared	3 / 5	(0 - 0.5'): Asphalt.	No recovery 6.3 6.4 6.7 1.5 No recovery 2.2 2.7 1.9 0.9 0.5 0.3						
0-5			(0.5' - 3') Silt (ML) with angular 2-6" cobbles, no odor/no sheen; Fill.							
5	3 / 5	4 / 5	(3.0' - 9.0') Silt (ML), brown, damp, silt with trace rounded medium gravel and trace intermixed fine sand, medium-high plasticity, medium dilatancy, no odor/no sheen; Willamette Silt.							
5-10			(9.0' - 16') Well graded gravel with silt and sand (GW-GM) , light brown, loose, fine to coarse gravel with fine sand and silt pockets, no odor/no sheen, Red-stained at 13.0', color change to gray at 14.0' with slight odor; wet; Linn Gravel.							
10										
10-15										
15										
15-17.5										
17.5										

\*Lab Sample Intervals: 14-15', 15.2-15.4', 16-16.7', 16.7-17.2'

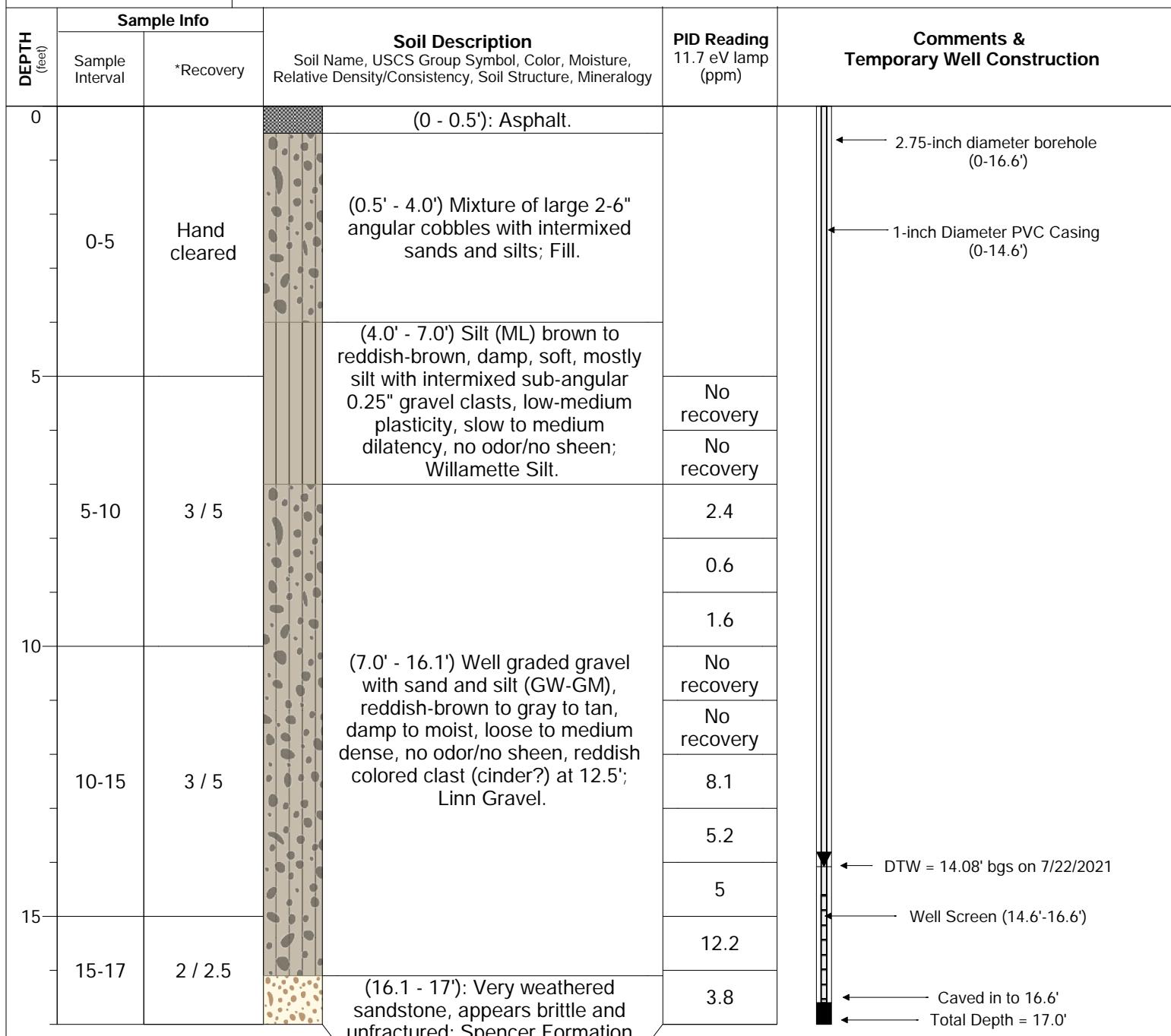
UV Fluorescence and Hydrophobic Dye Test yielded no results



**GSI** Water Solutions, Inc.

## LOG ID: AS4

CLIENT/PROJECT:	Acid Sump DNAPL Assessment	GROUND SURFACE ELEVATION AND DATUM: Unknown		
BORING LOCATION:	ATI Millersburg Operations		TOTAL DEPTH (ft): 17	DATE STARTED: 7/22/2021
DRILLING CONTRACTOR:	Cascade Drilling		LOGGED BY: J. Sherrod	DATE FINISHED: 7/23/2021
SAMPLING METHOD:	Dual Tube Soil Sleeve		DEPTH TO WATER (ft bgs) 14.08	FIRST: COMPLETED: 14.08
DRILLING METHOD:	Geoprobe 3230DT Track Rig			



\*Lab Sample Intervals:  
15.1-15.6', 15.6-16.1', 16.1-16.6'

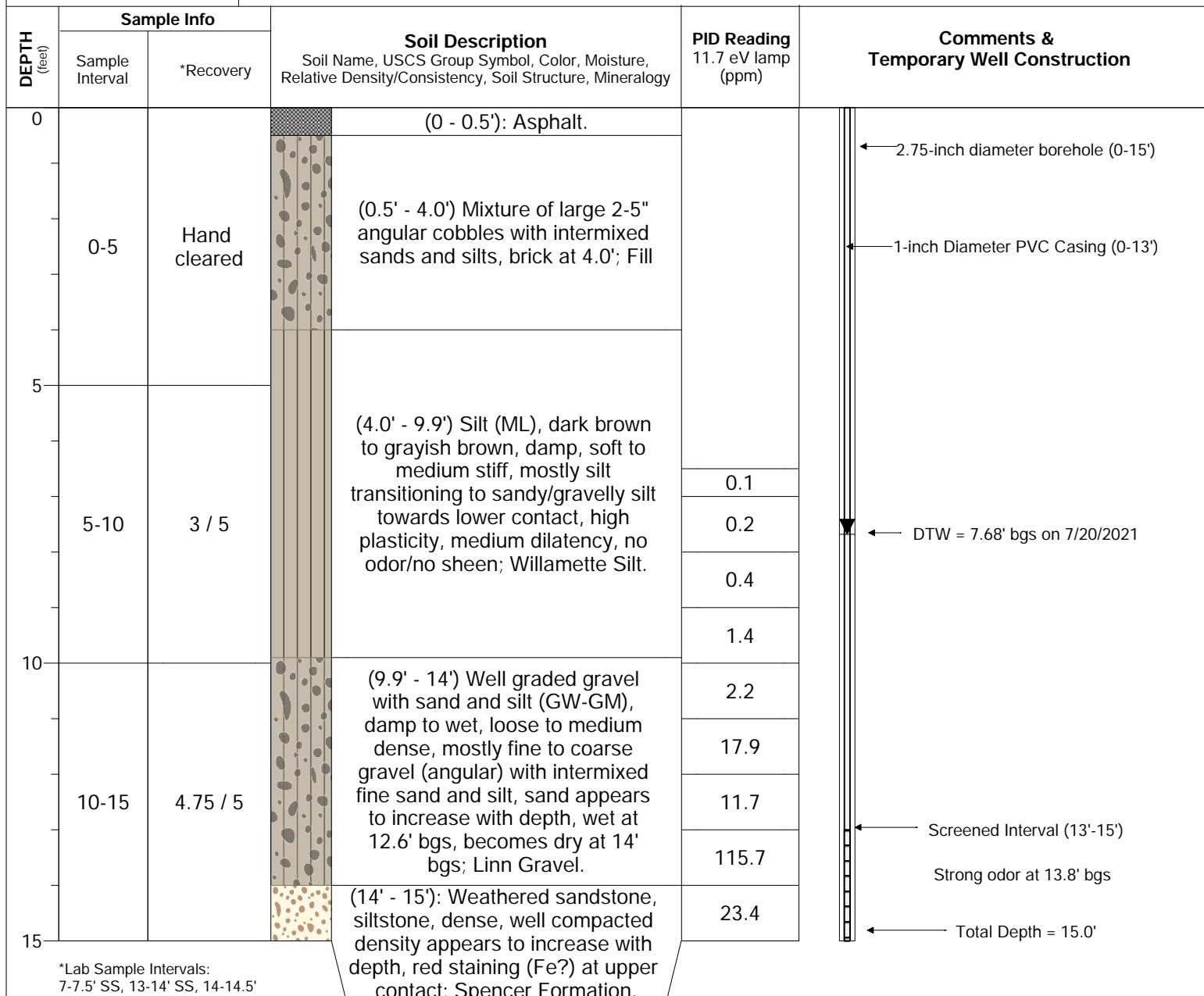
UV Fluorescence and Hydrophobic Dye Test yielded no results



**GSI** Water Solutions, Inc.

## LOG ID: AS5

CLIENT/PROJECT:	Acid Sump DNAPL Assessment	GROUND SURFACE ELEVATION AND DATUM: Unknown		
BORING LOCATION:	ATI Millersburg Operations	TOTAL DEPTH (ft): 15		DATE STARTED: 7/20/2021
DRILLING CONTRACTOR:	Cascade Drilling	LOGGED BY: J. Sherrod		DATE FINISHED: 7/21/2021
SAMPLING METHOD:	Dual Tube Soil Sleeve	DEPTH TO WATER (ft bgs)	FIRST: 7.68	COMPLETED: 7.68
DRILLING METHOD:	Geoprobe 3230DT Track Rig			



\*Lab Sample Intervals:  
7-7.5' SS, 13-14' SS, 14-14.5'

UV Fluorescence and Hydrophobic Dye Test yielded no results



**GSI** Water Solutions, Inc.

## LOG ID: AS6

CLIENT/PROJECT: Acid Sump DNAPL Assessment			GROUND SURFACE ELEVATION AND DATUM: Unknown		
BORING LOCATION: ATI Millersburg Operations			TOTAL DEPTH (ft): 19		DATE STARTED: 7/20/2021
DRILLING CONTRACTOR: Cascade Drilling			LOGGED BY: J. Sherrod		DATE FINISHED: 7/21/2021
SAMPLING METHOD: Dual Tube Soil Sleeve			DEPTH TO WATER (ft bgs)	FIRST: 8.09	COMPLETED: 8.09
DRILLING METHOD: Geoprobe 3230DT Track Rig					
DEPTH (feet)	Sample Info		Soil Description	PID Reading 11.7 eV lamp (ppm)	Comments & Temporary Well Construction
0	Sample Interval	*Recovery	Soil Name, USCS Group Symbol, Color, Moisture, Relative Density/Consistency, Soil Structure, Mineralogy		
0	0-5	Hand cleared	(0 - 0.4'): Asphalt.  (0.4' - 3.5') Mixture of large 2-6" angular cobbles with intermixed sands and silts; Fill.		2.75-inch diameter borehole (0-17.8')  1-inch Diameter PVC Casing (0-15.8')
5				0.5	
5	5-10	5 / 5	(3.5' - 11.5') Silt (ML), dark brownish gray to tan, dry to damp, no odor/no sheen; Willamette Silt.	0.3	
10				0.3	
10	10-15	3 / 5	(11.5' - 17.3') Well graded gravel with sand and silt (GW-GM), brown to dark brown, dry to wet, mostly fine to coarse angular gravel with intermixed sand and silt, no odor/no sheen, wet at 15.5' bgs; Linn Gravel.	0.6	
15				0.4	
15	15-19	4 / 4	(17.3' - 19.0'): Weathered sandstone, dense, upper contact with gravel appears brittle, horizontal fracturing is more abundant in denser sections; Spencer Formation.	No recovery	
				2.1	
				5.2	
				15.7	
				7.4	
				7.5	
				7.7	
				17.9	
				8.5	
<p>*Lab Sample Intervals: 16.1-16.7', 16.7-17.3'</p> <p>UV Fluorescence and Hydrophobic Dye Test yielded no results</p> <p>The diagram illustrates the borehole profile from 0 to 19.0' bgs. It shows the 2.75-inch diameter borehole and the 1-inch diameter PVC casing. The screened interval is marked from 15.8' to 17.8'. A note indicates the borehole caved in to 17.8' and reached a total depth of 19.0'.</p>					



**GSI** Water Solutions, Inc.

**LOG ID: AS7**

CLIENT/PROJECT: Acid Sump DNAPL Assessment			GROUND SURFACE ELEVATION AND DATUM: Unknown		
BORING LOCATION: ATI Millersburg Operations			TOTAL DEPTH (ft): 15		DATE STARTED: 7/20/2021
DRILLING CONTRACTOR: Cascade Drilling			LOGGED BY: J. Sherrod		DATE FINISHED: 7/21/2021
SAMPLING METHOD: Dual Tube Soil Sleeve			DEPTH TO WATER (ft bgs)	FIRST: 7.31	COMPLETED: 7.31
DRILLING METHOD: Geoprobe 3230DT Track Rig					
DEPTH (feet)	Sample Info		Soil Description	PID Reading 11.7 eV lamp (ppm)	Comments & Temporary Well Construction
0	Sample Interval	*Recovery	Soil Name, USCS Group Symbol, Color, Moisture, Relative Density/Consistency, Soil Structure, Mineralogy		
0-5	Hand cleared		(0 - 0.4'): Asphalt.		
5					
5-10	3.7 / 5		(0.4' - 6.3') Silt (ML), dark brown, damp, medium plasticity, high dilatancy, no odor/no sheen; Willamette Silt.	0.2	
10				0.4	
10-15	3 / 5		(6.3' - 13.8') Well graded gravel with sand and silt (GW-GM), tan to brownish gray, dry to damp, trace red staining throughout (Fe?), mostly fine to coarse angular gravel with sand and silt lenses, no odor/no sheen; Linn Gravel.	0.3	
15				0.3	
			(13.8' - 15.0'): Weathered sandstone, dense, vertical and horizontal fractures, no odor/no sheen; Spencer Formation.	No recovery	
				0.5	
				0.7	
				0.3	
				0.3	
				Caved in to 14.3'	
				Total Depth = 15.0'	

\*Lab Sample Intervals:  
13.3-13.8', 13.8-14.3', 14.3-14.8'

UV Fluorescence and Hydrophobic Dye Test yielded no results



**GSI** Water Solutions, Inc.

## LOG ID: AS8

CLIENT/PROJECT: Acid Sump DNAPL Assessment			GROUND SURFACE ELEVATION AND DATUM: Unknown		
BORING LOCATION: ATI Millersburg Operations			TOTAL DEPTH (ft): 19		DATE STARTED: 7/21/2021
DRILLING CONTRACTOR: Cascade Drilling			LOGGED BY: J. Sherrod		DATE FINISHED: 7/22/2021
SAMPLING METHOD: Dual Tube Soil Sleeve			DEPTH TO WATER (ft bgs)	FIRST: 15.92	COMPLETED: 15.92
DRILLING METHOD: Geoprobe 3230DT Track Rig					
DEPTH (feet)	Sample Info		Soil Description	PID Reading 11.7 eV lamp (ppm)	Comments & Temporary Well Construction
0	Sample Interval	*Recovery	Soil Name, USCS Group Symbol, Color, Moisture, Relative Density/Consistency, Soil Structure, Mineralogy		
0	0-5	Hand cleared	(0 - 10"): Asphalt.		
5			(10" - 3.0') Gravel fill, appears consistent 5/8" - 3/4"		
5	5-10	4.75 / 5		0.2	2.75-inch diameter borehole (0-17.1')
10				0.1	1-inch Diameter PVC Casing (0-15.1')
10	10-15	5 / 5		0.5	
15			(3.0' - 12') Silt (ML), brown to grayish brown, damp, medium-high plasticity, medium dilatancy, soft to medium stiff, no odor/no sheen, 4" silt/gravel lens at 11.5'; Willamette Silt.	0.7	
15	15-19	4 / 4		0.5	
19			(12' - 16.6') Well graded gravel with sand and silt (GW-GM), brown to grayish brown/tan, moist, mostly bladed/angular 0.5" - 2.5" gravel clasts with fine to coarse sand intermixed, no odor/no sheen, wet at 15 - 15.8' (silty, medium sand lens); Linn Gravel.	0.6	Screened Interval (15.1-17.1')
19			(16.6' - 19.0'): Highly weathered sandstone, Fe staining near contact with gravel, core becomes more intact with depth, trace horizontal fractures starting at 18.5', dry to damp; Spencer Formation.	2.4	DTW = 15.92' bgs on 7/21/2021
				2.2	Caved in to 17.1'
				0.9	Total Depth = 19.0'
*Lab Sample Intervals: 15.6-16.1', 16.1-16.6', 16.6-17.1' UV Fluorescence and Hydrophobic Dye Test yielded no results					



**GSI** Water Solutions, Inc.

## LOG ID: AS9

CLIENT/PROJECT:			Acid Sump DNAPL Assessment			GROUND SURFACE ELEVATION AND DATUM: Unknown						
BORING LOCATION:			ATI Millersburg Operations			TOTAL DEPTH (ft): 15		DATE STARTED: 7/21/2021				
DRILLING CONTRACTOR:			Cascade Drilling			LOGGED BY: J. Sherrod		DATE FINISHED: 7/22/2021				
SAMPLING METHOD:			Dual Tube Soil Sleeve			DEPTH TO WATER (ft bgs)	FIRST: 5.81	COMPLETED: 5.81				
DRILLING METHOD:		Geoprobe 3230DT Track Rig										
DEPTH (feet)	Sample Info		Soil Description	PID Reading 11.7 eV lamp (ppm)	Comments & Temporary Well Construction							
0	Sample Interval	*Recovery	Soil Name, USCS Group Symbol, Color, Moisture, Relative Density/Consistency, Soil Structure, Mineralogy									
0	0-5	Hand cleared	(0 - 0.4'): Asphalt.  (0.4' - 3.5'): 2" - 1' angular cobbles with sand and silt intermixed throughout; Fill.									
5	5-10	5 / 5	(3.5' - 9.6') Silt (ML), brown to bluish-tan, damp, medium to high plasticity, medium dilatancy, silt with trace gravel clasts and varying degrees of fine to medium sand lenses, soft to medium dense, no odor/no sheen, 1.5" Angular rock with fine sand at 6.7'; Willamette Silt.	0.2								
10	10-15	5 / 5	(9.6' - 14.6') Well graded gravel with sand and silt (GW-GM), brown to tan, damp to wet, loose to medium dense, mostly fine to coarse gravel with fine to medium intermixed sand pockets and increasing silt with depth, no odor/no sheen, silty sand (wet) at 11'-12', white/gray discoloration at contact with underlying sandstone (14.6'); Linn Gravel.  (14.6' - 15.0'): Highly weathered sandstone, brittle, fractured, soft, dry, no odor/no sheen; Spencer Formation.	0.7								
15				2.5								
				2.2								
				0.3								
				0.5								
				0.7								
				0.2								
				11.6								
				7.3								
<small>*Lab Sample Intervals: 13.6-14.1', 14.1-14.6', 14.6-15'</small>												
<small>UV Fluorescence and Hydrophobic Dye Test yielded no results</small>												



**GSI** Water Solutions, Inc.

**LOG ID: AS10**

CLIENT/PROJECT:			Acid Sump DNAPL Assessment			GROUND SURFACE ELEVATION AND DATUM: Unknown			
BORING LOCATION:			ATI Millersburg Operations			TOTAL DEPTH (ft): 17		DATE STARTED: 7/21/2021	
DRILLING CONTRACTOR:			Cascade Drilling			LOGGED BY: J. Sherrod		DATE FINISHED: 7/22/2021	
SAMPLING METHOD:		Dual Tube Soil Sleeve		DEPTH TO WATER (ft bgs)	FIRST:	11.22	COMPLETED:	11.22	
DRILLING METHOD:		Geoprobe 3230DT Track Rig							
DEPTH (feet)	Sample Info		Soil Description	PID Reading 11.7 eV lamp (ppm)	Comments & Temporary Well Construction				
0	Sample Interval	*Recovery	Soil Name, USCS Group Symbol, Color, Moisture, Relative Density/Consistency, Soil Structure, Mineralogy						
0	0-5	Hand cleared	(0 - 0.4'): Asphalt.  (0.4' - 3.5') Gravel, sands, silts, appears to be fill, gravel is angular, clasts are 0.5 - 6", dense; Fill.						
5	5-10	3 / 5							
10	10-15	2.65 / 5	(3.5' - 16.2') Well graded gravel with sand and silt (GW-GM), gray to grayish brown, wet, loose to medium dense, mostly angular to sub-rounded gravel (fine to coarse) with fine to coarse sand with silt intermixed, no odor/no sheen, wet 0.25" rounded gravel at 15.5'; Linn Gravel.						
15	15-17	2 / 2	(16.2' - 17.0'): Highly weathered sandstone, brittle, appears to break apart easily, no odor/no sheen; Spencer Formation.						
<p>*Lab Sample Intervals: 15.2-15.7', 15.7-16.2', 16.2-16.7' UV Fluorescence and Hydrophobic Dye Test yielded no results</p>									

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## **APPENDIX B**

Photo Logs

1.



2.



1:  
IMG\_3430: Sample Location 98A6,  
Soil Sample 7-8 ft

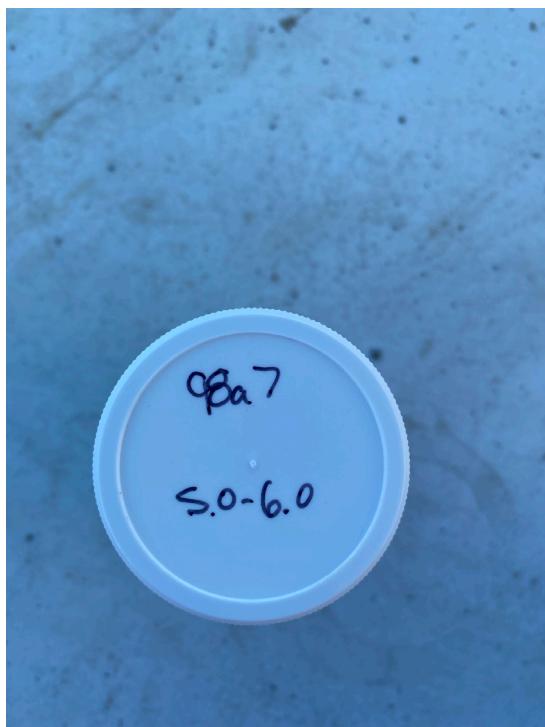
2:  
IMG\_3431: Sample Location 98A6,  
Soil Sample 7-8 ft, Sudan IV Dye Test

## APPENDIX B Sample Location 98A6

### Acid Sump Area Source Area DNAPL Assessment



1.



2.



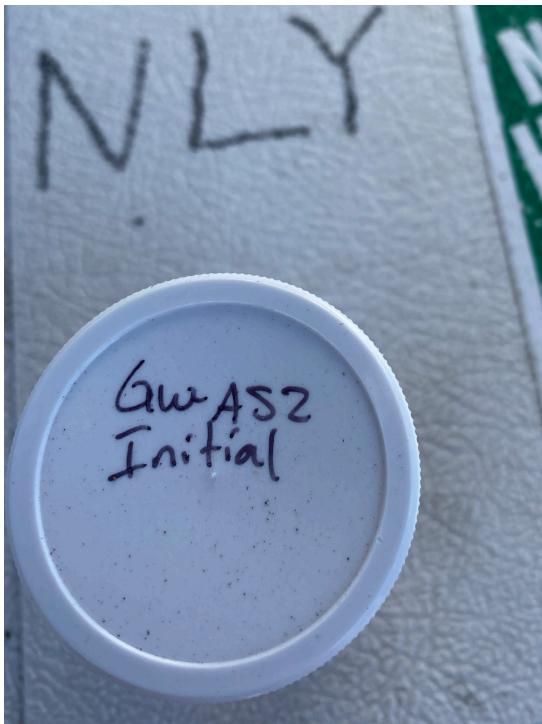
1:  
IMG\_3437: Sample Location 98A7,  
Soil Sample 5-6 ft

2:  
IMG\_3438: Sample Location 98A7,  
Soil Sample 5-6 ft, Sudan IV Dye Test

## APPENDIX B Sample Location 98A7 Acid Sump Area Source Area DNAPL Assessment



1.



2.



3.



1:  
IMG\_3346: Sample Location AS2,  
Initial Groundwater Sample

2:  
IMG\_3347: Sample Location AS2,  
Initial Groundwater Sample,  
Sudan IV Dye Test

3:  
IMG\_3348: Sample Location AS2,  
Initial Groundwater Sample,  
Sudan IV Dye Test

## APPENDIX B Sample Location AS2

### Acid Sump Area Source Area DNAPL Assessment



4.



5.



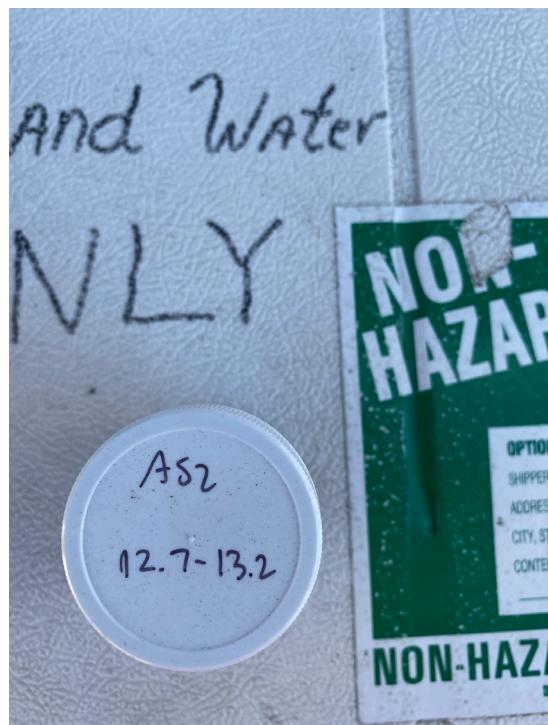
4:  
IMG\_3376: Sample Location AS2,  
Overnight Groundwater Sample

5:  
IMG\_3377: Sample Location AS2,  
Overnight Groundwater Sample,  
Sudan IV Dye Test

## APPENDIX B Sample Location AS2 Acid Sump Area Source Area DNAPL Assessment



6.



7.



6:

IMG\_3378: Sample Location AS2,  
Soil Sample 12.7-13.2 ft

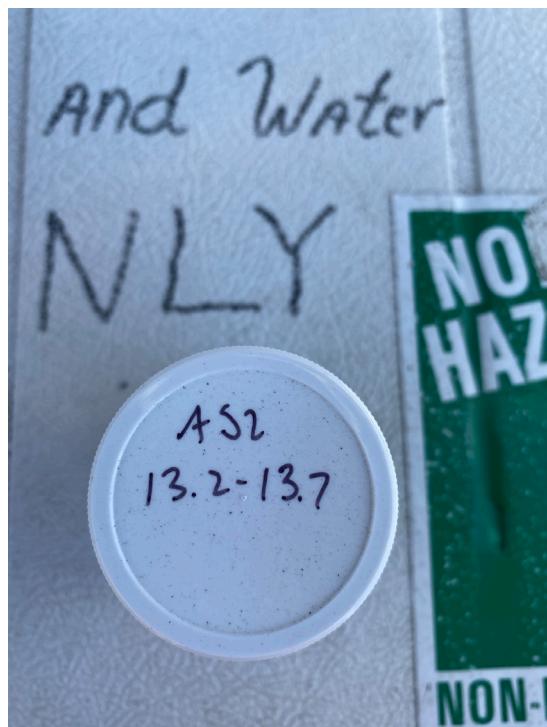
7:

IMG\_3379: Sample Location AS2,  
Soil Sample 12.7-13.2 ft,  
Sudan IV Dye Test

## APPENDIX B Sample Location AS2

Acid Sump Area Source Area DNAPL Assessment

8.



9.



8:  
IMG\_3382: Sample Location AS2,  
Soil Sample 13.2-13.7 ft

9:  
IMG\_3383: Sample Location AS2,  
Soil Sample 13.2-13.7 ft,  
Sudan IV Dye Test

## APPENDIX B Sample Location AS2

### Acid Sump Area Source Area DNAPL Assessment



1.



2.



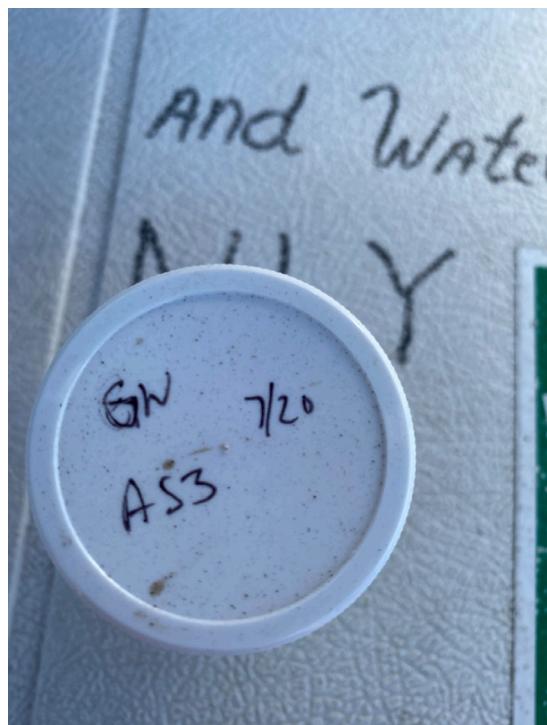
**1:**  
IMG\_3359: Sample Location AS3,  
Initial Groundwater Sample

**2:**  
IMG\_3360: Sample Location AS3,  
Initial Groundwater Sample,  
Sudan IV Dye Test

**APPENDIX B**  
**Sample Location AS3**  
Acid Sump Area Source Area DNAPL Assessment



3.



4.



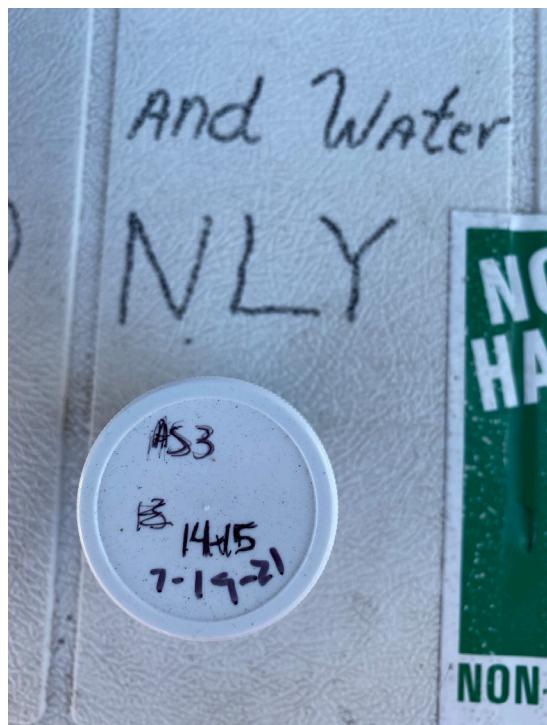
3:  
IMG\_3357: Sample Location AS3,  
Overnight Groundwater Sample

4:  
IMG\_3358: Sample Location AS3,  
Overnight Groundwater Sample,  
Sudan IV Dye Test

**APPENDIX B**  
**Sample Location AS3**  
Acid Sump Area Source Area DNAPL Assessment



5.



6.



5:

IMG\_3371: Sample Location AS3, Soil  
Sample 14-15 ft

6:

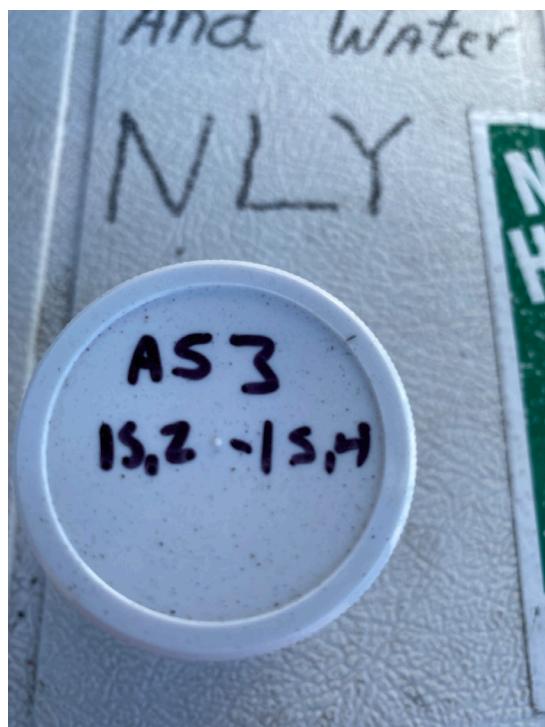
IMG\_3372: Sample Location AS3, Soil  
Sample 14-15 ft, Sudan IV Dye Test

## APPENDIX B Sample Location AS3

Acid Sump Area Source Area DNAPL Assessment



7.



8.



7:

IMG\_3361: Sample Location AS3, Soil  
Sample 15.2-15.4 ft

8:

IMG\_3362: Sample Location AS3,  
Soil Sample 15.2-15.4 ft, Sudan IV  
Dye Test

## APPENDIX B

### Sample Location AS3

Acid Sump Area Source Area DNAPL Assessment



1.



2.



1:  
IMG\_3426: Sample Location AS4,  
Initial Groundwater Sample

2:  
IMG\_3427: Sample Location AS4,  
Initial Groundwater Sample, Sudan IV  
Dye Test

**APPENDIX B**  
**Sample Location AS4**  
Acid Sump Area Source Area DNAPL Assessment



3.



4.



3:

IMG\_3424: Sample Location AS4, Soil  
Sample 16.1 ft

4:

IMG\_3425: Sample Location AS4, Soil  
Sample 16.1 ft, Sudan IV Dye Test

## APPENDIX B

### Sample Location AS4

#### Acid Sump Area Source Area DNAPL Assessment



1.



2.



3.



1:  
IMG\_3373: Sample Location AS5,  
Bucket Sample

2:  
IMG\_3374: Sample Location AS5,  
Bucket Sample, Sudan IV Dye Test

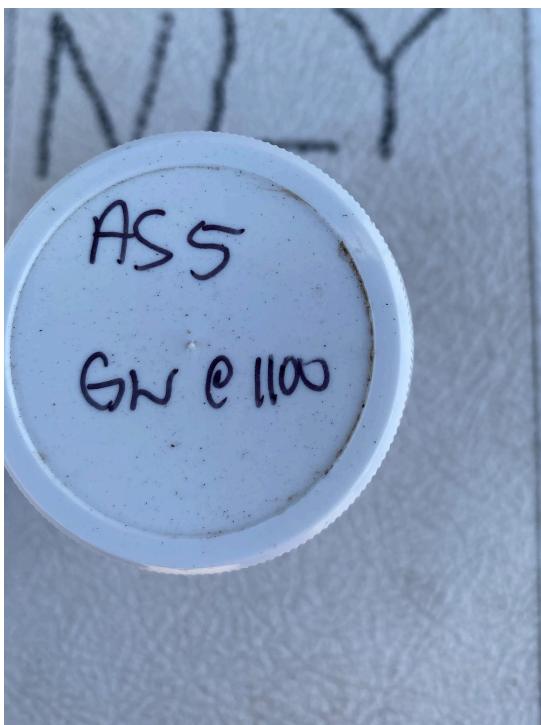
3:  
IMG\_3375: Sample Location AS5,  
Bucket Sample, Sudan IV Dye Test

## APPENDIX B Sample Location AS5

Acid Sump Area Source Area DNAPL Assessment



4.



5.



6.



4:  
IMG\_3339: Sample Location AS5,  
Initial Groundwater Sample

5:  
IMG\_3340: Sample Location AS5,  
Initial Groundwater Sample,  
Sudan IV Dye Test

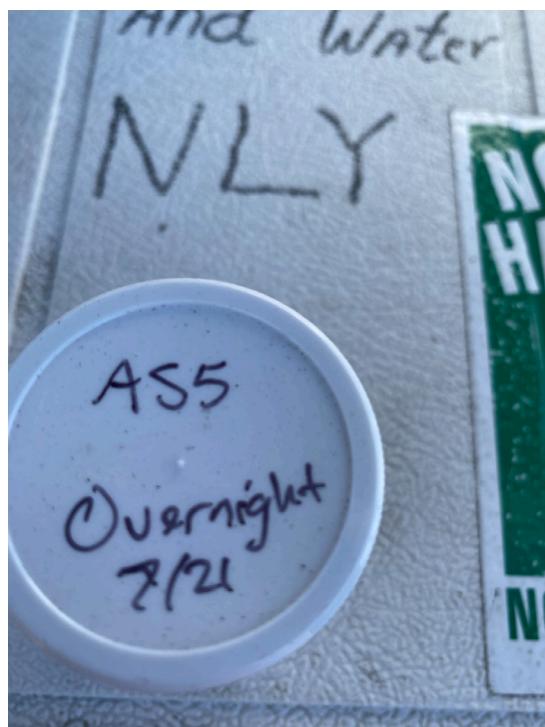
6:  
IMG\_3341: Sample Location AS5,  
Initial Groundwater Sample,  
Sudan IV Dye Test

## APPENDIX B Sample Location AS5

### Acid Sump Area Source Area DNAPL Assessment



7.



8.



7:

IMG\_3365: Sample Location AS5,  
Overnight Groundwater Sample

8:

IMG\_3366: Sample Location AS5,  
Overnight Groundwater Sample,  
Sudan IV Dye Test

## APPENDIX B Sample Location AS5

Acid Sump Area Source Area DNAPL Assessment



9.



10.



**9:**  
IMG\_3369: Sample Location AS5,  
Soil Sample 7-7.5 ft

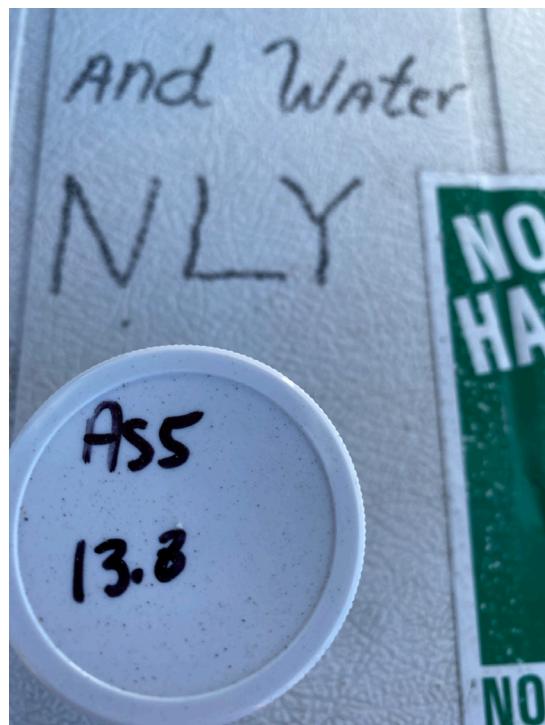
**10:**  
IMG\_3370: Sample Location AS5,  
Soil Sample 7-7.5 ft,  
Sudan IV Dye Test

## APPENDIX B Sample Location AS5

### Acid Sump Area Source Area DNAPL Assessment



11.



12.



11:

IMG\_3367: Sample Location AS5,  
Soil Sample 13.8 ft

12:

IMG\_3368: Sample Location AS5,  
Soil Sample 13.8 ft, Sudan IV Dye Test

## APPENDIX B Sample Location AS5

Acid Sump Area Source Area DNAPL Assessment



1.



2.



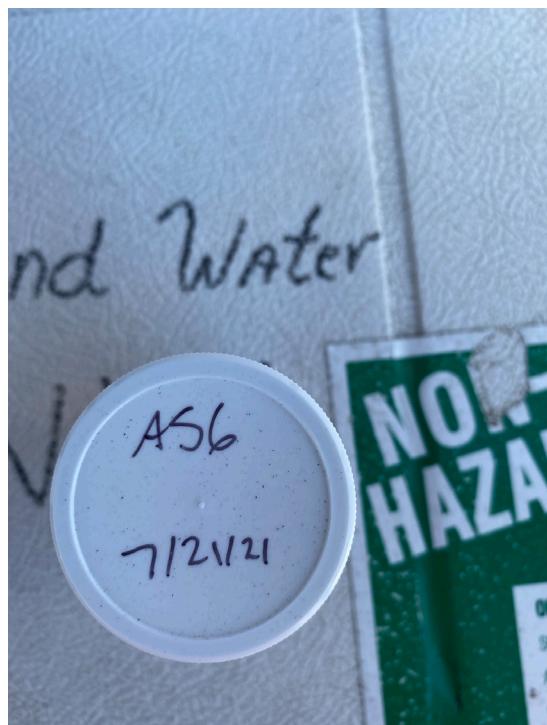
1:  
IMG\_3351: Sample Location AS6,  
Initial Groundwater Sample

2:  
IMG\_3352: Sample Location AS6,  
Initial Groundwater Sample,  
Sudan IV Dye Test

## APPENDIX B Sample Location AS6 Acid Sump Area Source Area DNAPL Assessment



3.



4.



3:  
IMG\_3398: Sample Location AS6,  
Overnight Groundwater Sample

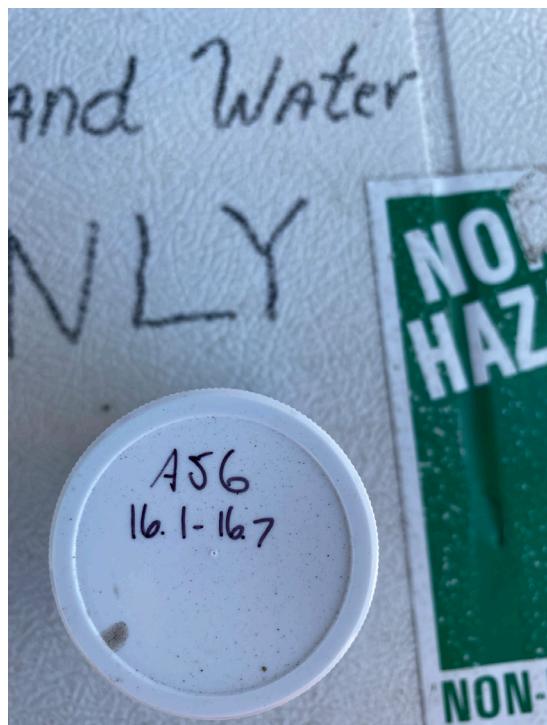
4:  
IMG\_3399: Sample Location AS6,  
Overnight Groundwater Sample,  
Sudan IV Dye Test

## APPENDIX B Sample Location AS6

Acid Sump Area Source Area DNAPL Assessment



5.



6.



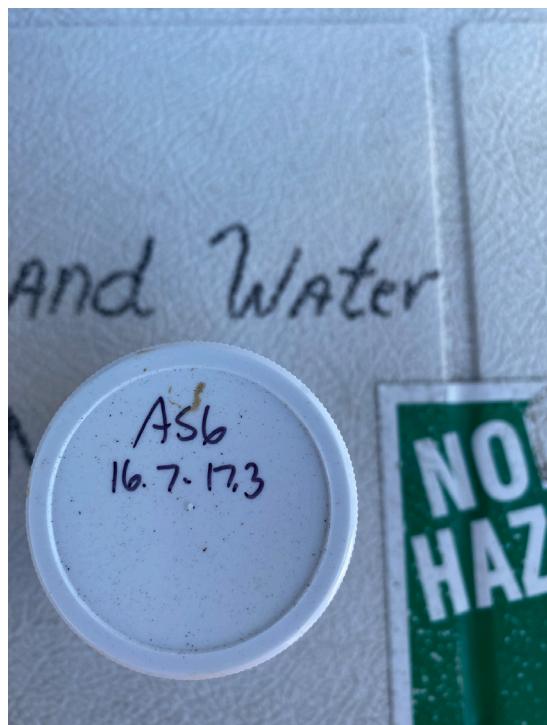
5:  
IMG\_3396: Sample Location AS6,  
Soil Sample 16.1-16.7 ft

6:  
IMG\_3397: Sample Location AS6,  
Soil Sample 16.1-16.7 ft,  
Sudan IV Dye Test

## APPENDIX B Sample Location AS6 Acid Sump Area Source Area DNAPL Assessment



7.



8.



7:  
IMG\_3394: Sample Location AS6,  
Soil Sample 16.7-17.3 ft

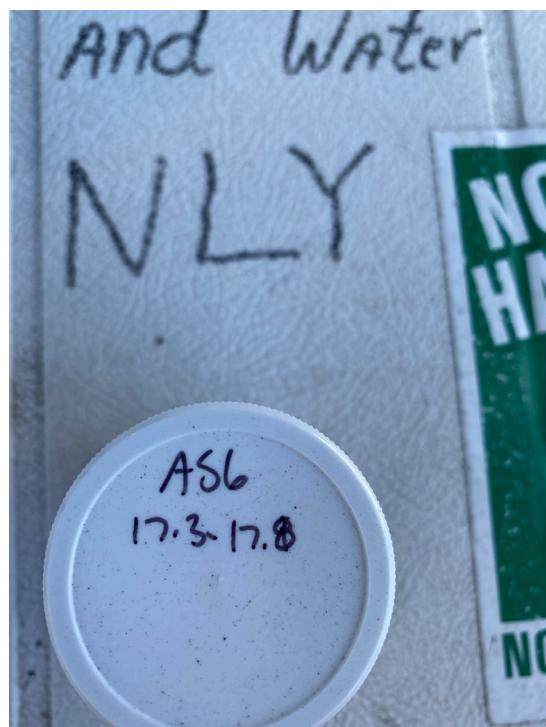
8:  
IMG\_3395: Sample Location AS6,  
Soil Sample 16.7-17.3 ft,  
Sudan IV Dye Test

## APPENDIX B Sample Location AS6

### Acid Sump Area Source Area DNAPL Assessment



9.



10.



9:  
IMG\_3380: Sample Location AS6,  
Soil Sample 17.3-17.8 ft

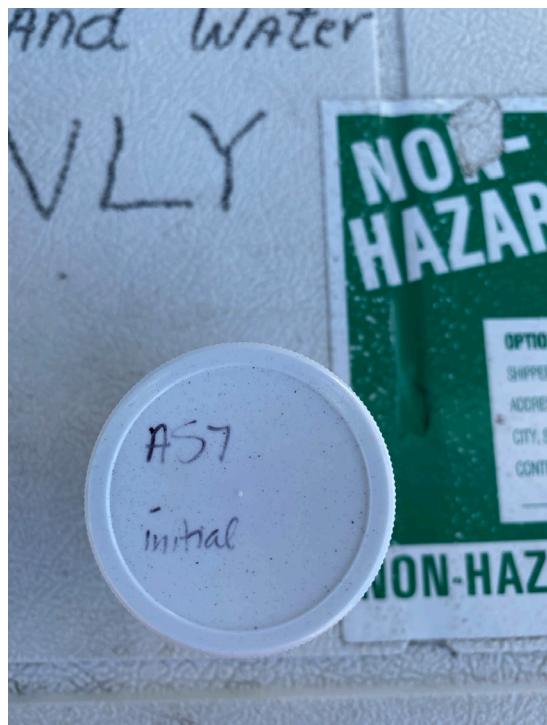
10:  
IMG\_3381: Sample Location AS6,  
Soil Sample 17.3-17.8 ft,  
Sudan IV Dye Test

## APPENDIX B Sample Location AS6

### Acid Sump Area Source Area DNAPL Assessment



1.



2.



1:

IMG\_3392: Sample Location AS7,  
Initial Groundwater Sample

2:

IMG\_3393: Sample Location AS7,  
Initial Groundwater Sample,  
Sudan IV Dye Test

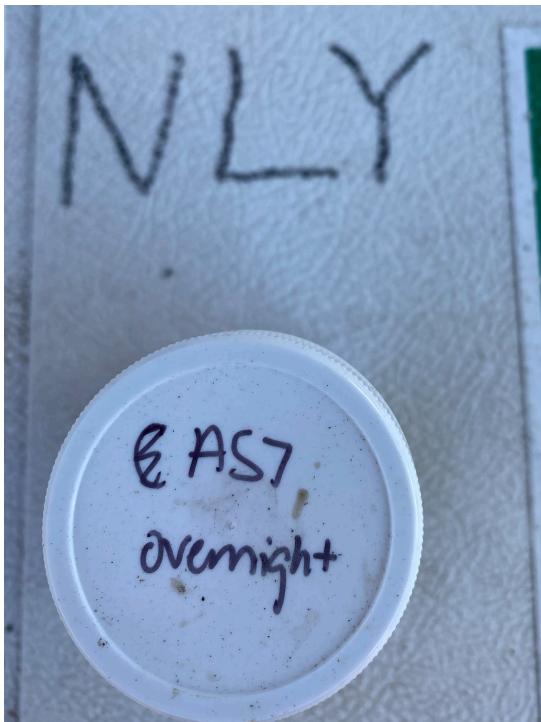
## APPENDIX B

### Sample Location AS7

Acid Sump Area Source Area DNAPL Assessment



3.



4.



5.



**3:**  
IMG\_3384: Sample Location AS7,  
Overnight Groundwater Sample

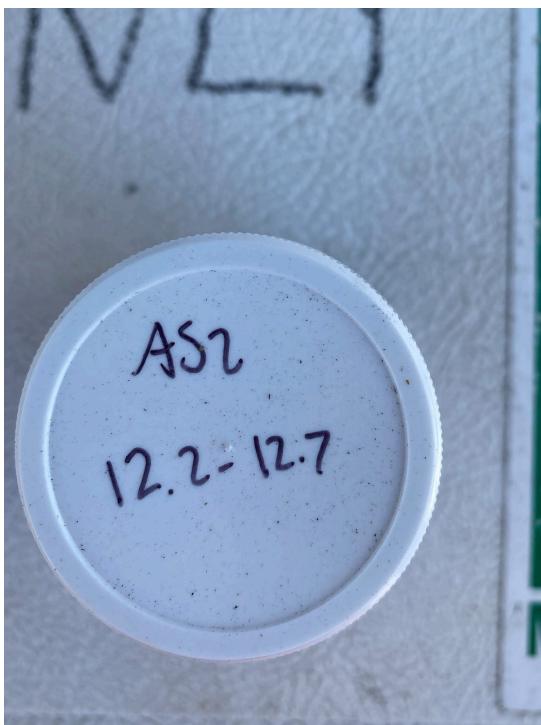
**4:**  
IMG\_3385: Sample Location AS7,  
Overnight Groundwater Sample,  
Sudan IV Dye Test

**5:**  
IMG\_3386: Sample Location AS7,  
Overnight Groundwater Sample,  
Sudan IV Dye Test

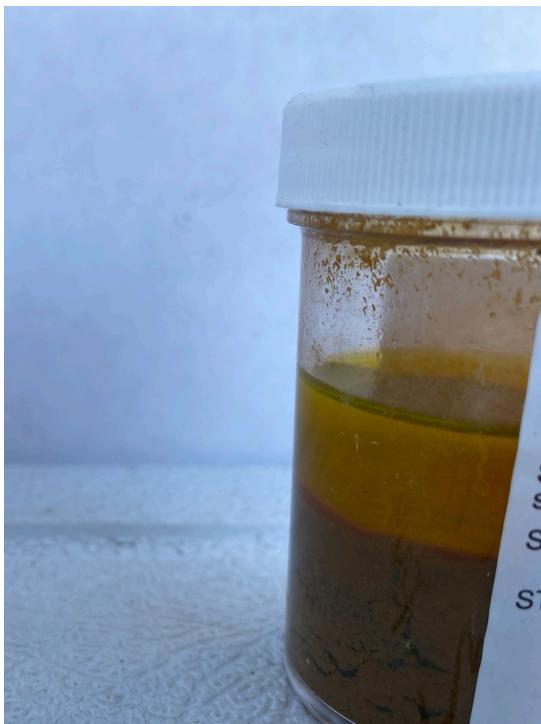
## **APPENDIX B**

### **Sample Location AS7**

6.



7.



8.



6:

IMG\_3387: Sample Location AS7,  
Soil Sample 12.2-12.7 ft

7:

IMG\_3388: Sample Location AS7,  
Soil Sample 12.2-12.7 ft,  
Sudan IV Dye Test

8:

IMG\_3389: Sample Location AS7,  
Soil Sample 12.2-12.7 ft,  
Sudan IV Dye Test

## APPENDIX B

### Sample Location AS7

Acid Sump Area Source Area DNAPL Assessment



9.



10.



9:

IMG\_3390: Sample Location AS7,  
Soil Sample 13.8 ft

10:

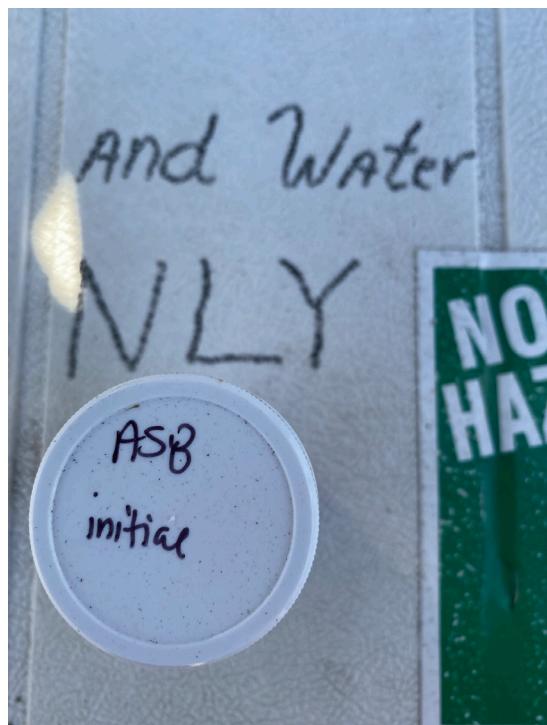
IMG\_3391: Sample Location AS7,  
Soil Sample 13.8 ft, Sudan IV Dye Test

## APPENDIX B Sample Location AS7

### Acid Sump Area Source Area DNAPL Assessment



1.



2.



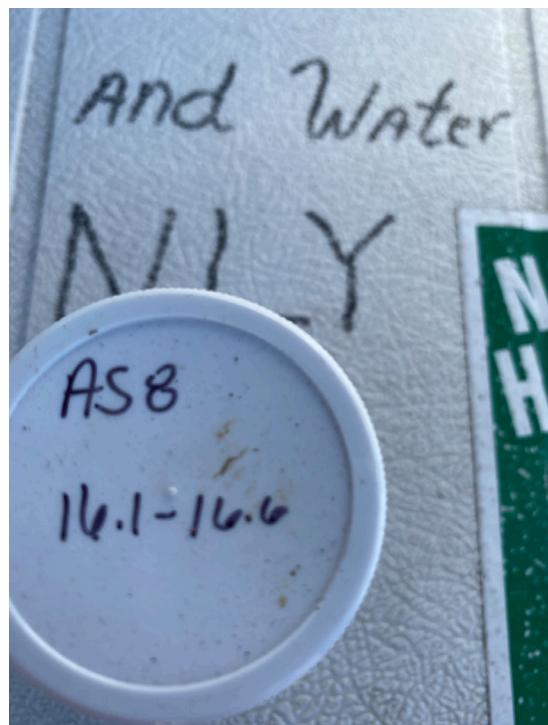
1:  
IMG\_3363: Sample Location AS8,  
Initial Groundwater Sample

2:  
IMG\_3364: Sample Location AS8,  
Initial Groundwater Sample,  
Sudan IV Dye Test

## APPENDIX B Sample Location AS8 Acid Sump Area Source Area DNAPL Assessment



3.



4.



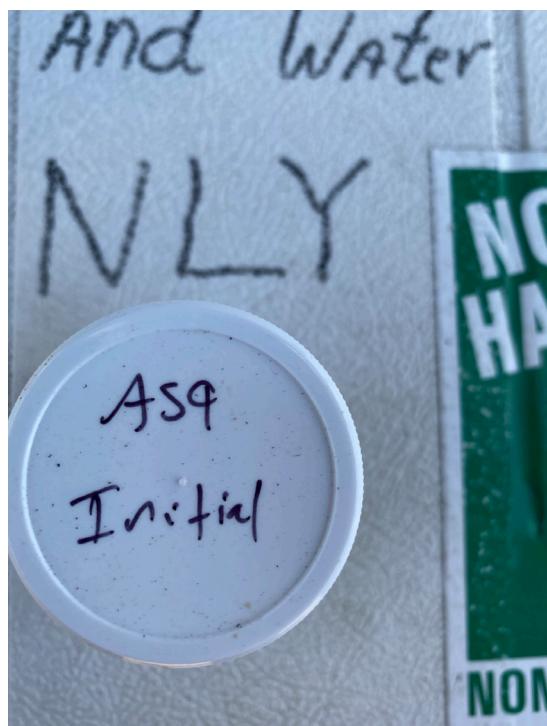
3:  
IMG\_3353: Sample Location AS8,  
Soil Sample 16.1-16.6 ft

4:  
IMG\_3354: Sample Location AS8,  
Soil Sample 16.1-16.6 ft,  
Sudan IV Dye Test

**APPENDIX B**  
**Sample Location AS8**  
Acid Sump Area Source Area DNAPL Assessment



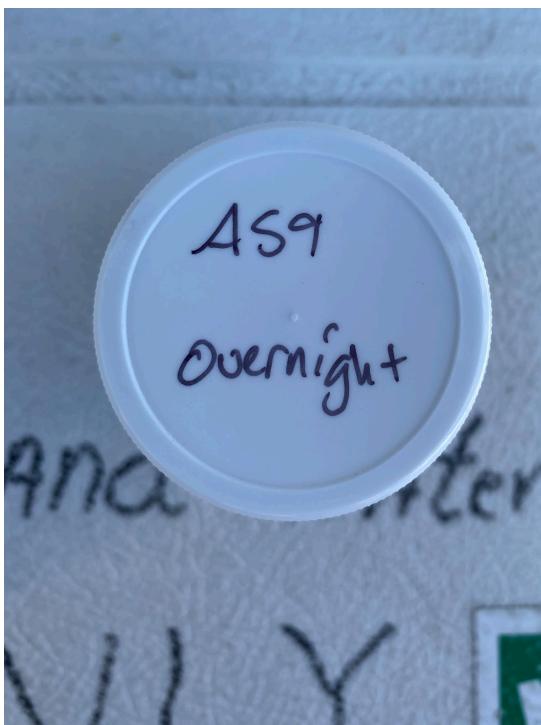
1.



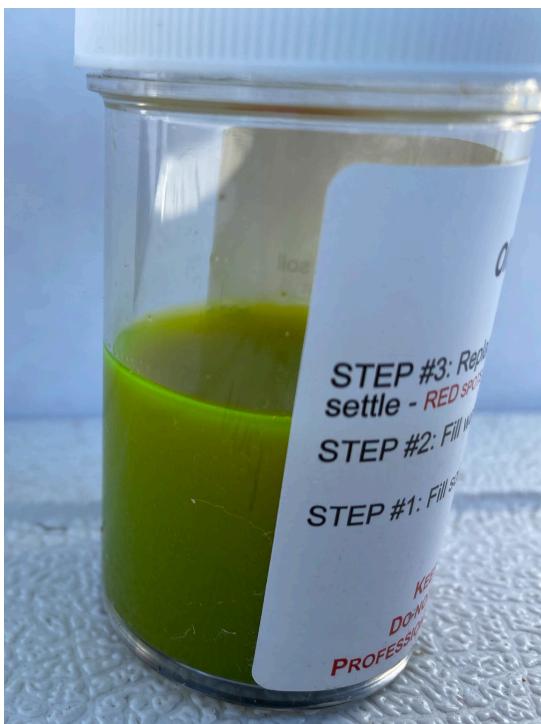
1:  
IMG\_3337: Sample Location AS9,  
Initial Groundwater Sample

**APPENDIX B**  
**Sample Location AS9**  
Acid Sump Area Source Area DNAPL Assessment

2.



3.



4.



2:

IMG\_3335: Sample Location AS9,  
Overnight Groundwater Sample

3:

IMG\_3336: Sample Location AS9,  
Overnight Groundwater Sample,  
Sudan IV Dye Test

4:

IMG\_3338: Sample Location AS9,  
Overnight Groundwater Sample,  
Sudan IV Dye Test

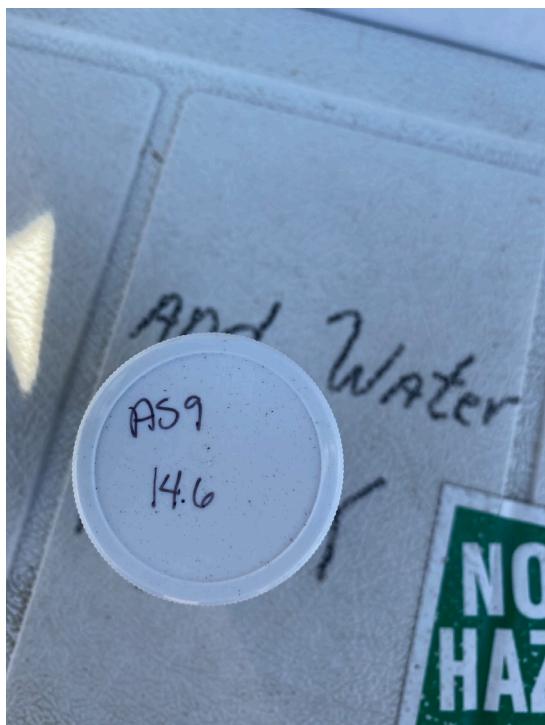
## APPENDIX B

### Sample Location AS9

Acid Sump Area Source Area DNAPL Assessment



5.



6.



5:  
IMG\_3355: Sample Location AS9,  
Soil Sample 14.6 ft

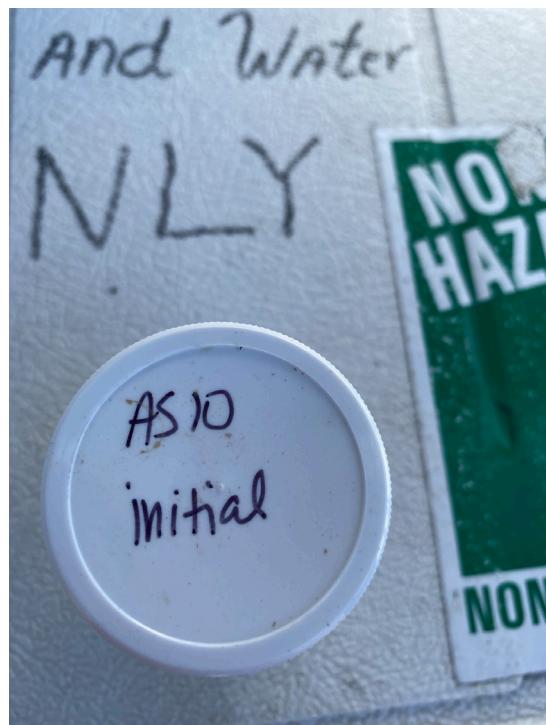
6:  
IMG\_3356: Sample Location AS9,  
Soil Sample 4.6 ft,  
Sudan IV Dye Test

## APPENDIX B Sample Location AS9

### Acid Sump Area Source Area DNAPL Assessment



1.



2.



1:

IMG\_3349: Sample Location AS10, Initial Groundwater Sample

2:

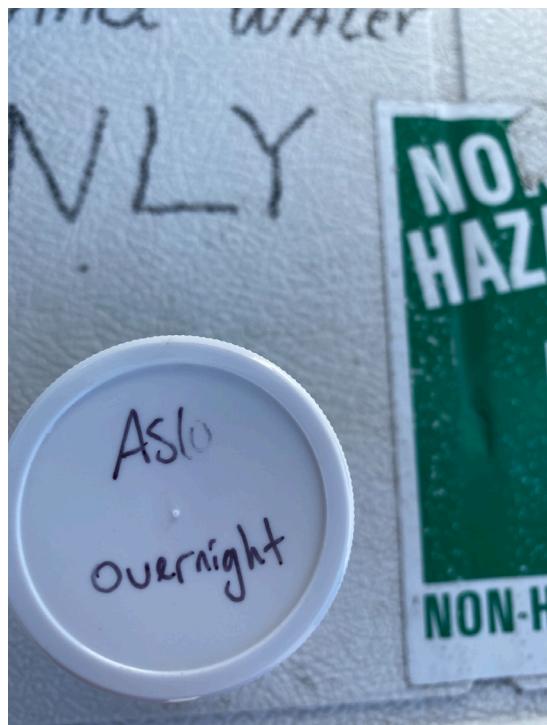
IMG\_3350: Sample Location AS10, Initial Groundwater Sample, Sudan IV Dye Test

## APPENDIX B Sample Location AS10

### Acid Sump Area Source Area DNAPL Assessment



3.



4.



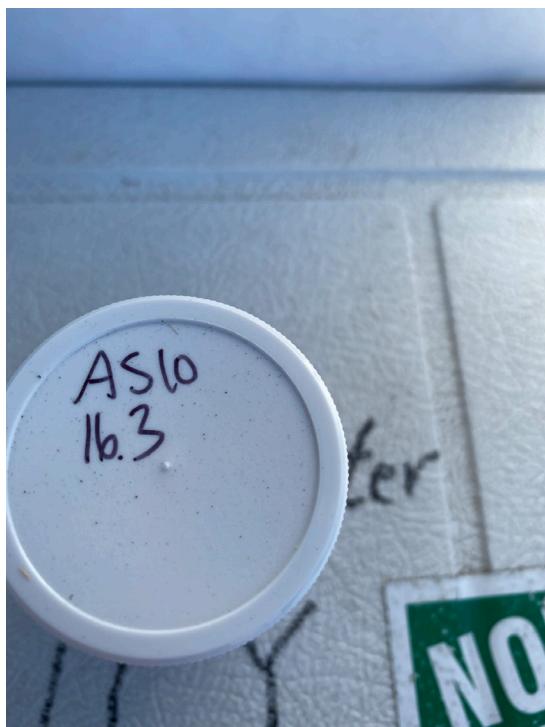
3:  
IMG\_3342: Sample Location AS10,  
Overnight Groundwater Sample

4:  
IMG\_3343: Sample Location AS10,  
Overnight Groundwater Sample,  
Sudan IV Dye Test

## APPENDIX B Sample Location AS10 Acid Sump Area Source Area DNAPL Assessment



5.



6.



5:  
IMG\_3344: Sample Location AS10,  
Soil Sample 16.3 ft

6:  
IMG\_3345: Sample Location AS10,  
Soil Sample 16.3 ft,  
Sudan IV Dye Test

## APPENDIX B Sample Location AS10

### Acid Sump Area Source Area DNAPL Assessment



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## **APPENDIX C**

Laboratory Analytical Reports

# Libby Environmental, Inc.

ATI Acid Sump Investigation PROJECT  
 GSI Water Solutions  
 Albany, Oregon  
 Libby Project # L210720-40

3322 South Bay Road NE  
 Olympia, WA 98506  
 Phone: (360) 352-2110  
 FAX: (360) 352-4154  
 Email: libbyenv@gmail.com

## Volatile Organic Compounds by EPA Method 8260D in Water

Sample Description	Method	GW-AS3-	GW-AS3-	GW-AS3-	GW-AS3-	GW-Dup-
	Blank	Initial	5Min	5Min Dup	Overnight	10-0721
Date Sampled	Reporting	N/A	7/19/2020	7/19/2020	7/19/2020	7/20/2021
Date Analyzed	Limits	7/20/2021	7/20/2021	7/20/2021	7/20/2021	7/20/2021
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Dichlorodifluoromethane	2.0	nd	<20	<40	<40	<40
Chloromethane	2.0	nd	<20	<40	<40	<40
Vinyl chloride	0.2	nd	13	13	14	5.8
Bromomethane	2.0	nd	<20	<40	<40	<40
Chloroethane	2.0	nd	3400	2600	2900	1700
Trichlorofluoromethane	2.0	nd	<20	<40	<40	<40
1,1-Dichloroethene	0.5	nd	160	180	170	50
Methylene chloride	1.0	nd	<10	<20	<20	<20
Methyl <i>tert</i> - Butyl Ether (MTBE)	5.0	nd	<50	<100	<100	<100
<i>trans</i> -1,2-Dichloroethene	1.0	nd	<10	<20	<20	<20
1,1-Dichloroethane	1.0	nd	950	860	860	380
2,2-Dichloropropane	2.0	nd	<20	<40	<40	<40
<i>cis</i> -1,2-Dichloroethene	1.0	nd	<10	<20	<20	<20
Chloroform	1.0	nd	<10	<20	<20	<20
1,1,1-Trichloroethane (TCA)	1.0	nd	70	60	68	15 J
Carbon tetrachloride	1.0	nd	<10	<20	<20	<20
1,1-Dichloropropene	1.0	nd	<10	<20	<20	<20
Benzene	1.0	nd	<10	<20	<20	<20
1,2-Dichloroethane (EDC)	1.0	nd	<10	<20	<20	<20
Trichloroethene (TCE)	0.4	nd	11	13	<8.0	<8.0
1,2-Dichloropropane	1.0	nd	<10	<20	<20	<20
Dibromomethane	1.0	nd	<10	<20	<20	<20
Bromodichloromethane	1.0	nd	<10	<20	<20	<20
<i>cis</i> -1,3-Dichloropropene	1.0	nd	<10	<20	<20	<20
Toluene	1.0	nd	<10	<20	<20	<20
Trans-1,3-Dichloropropene	1.0	nd	<10	<20	<20	<20
1,1,2-Trichloroethane	1.0	nd	<10	<20	<20	<20
Tetrachloroethene (PCE)	1.0	nd	<10	<20	<20	<20
1,3-Dichloropropane	1.0	nd	<10	<20	<20	<20
Dibromochloromethane	1.0	nd	<10	<20	<20	<20
1,2-Dibromoethane (EDB) *	0.01	nd	<0.1	<0.2	<0.2	<0.2
Chlorobenzene	1.0	nd	<10	<20	<20	<20
Ethylbenzene	1.0	nd	<10	<20	<20	<20
1,1,1,2-Tetrachloroethane	1.0	nd	<10	<20	<20	<20
Total Xylenes	2.0	nd	<20	<40	<40	<40
Styrene	1.0	nd	<10	<20	<20	<20

# Libby Environmental, Inc.

ATI Acid Sump Investigation PROJECT  
 GSI Water Solutions  
 Albany, Oregon  
 Libby Project # L210720-40

3322 South Bay Road NE  
 Olympia, WA 98506  
 Phone: (360) 352-2110  
 FAX: (360) 352-4154  
 Email: libbyenv@gmail.com

## Volatile Organic Compounds by EPA Method 8260D in Water

Sample Description	Method	GW-AS3- Blank	GW-AS3- Initial	GW-AS3- 5Min	GW-AS3- 5Min Dup	GW-AS3- Overnight	GW-Dup- 10-0721
Date Sampled	Reporting	N/A	7/19/2020	7/19/2020	7/19/2020	7/20/2021	7/20/2021
Date Analyzed	Limits	7/20/2021	7/20/2021	7/20/2021	7/20/2021	7/20/2021	7/20/2021
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Bromoform	1.0	nd	<10	<20	<20	<20	<20
Isopropylbenzene	4.0	nd	<40	<80	<80	<80	<80
1,1,2,2-Tetrachloroethane	1.0	nd	<10	<20	<20	<20	<20
Bromobenzene	1.0	nd	<10	<20	<20	<20	<20
n-Propylbenzene	1.0	nd	<10	<20	<20	<20	<20
1,2,3-Trichloropropane	1.0	nd	<10	<20	<20	<20	<20
2-Chlorotoluene	1.0	nd	<10	<20	<20	<20	<20
1,3,5-Trimethylbenzene	1.0	nd	<10	<20	<20	<20	<20
4-Chlorotoluene	1.0	nd	<10	<20	<20	<20	<20
tert-Butylbenzene	1.0	nd	<10	<20	<20	<20	<20
1,2,4-Trimethylbenzene	1.0	nd	<10	<20	<20	<20	<20
sec-Butylbenzene	1.0	nd	<10	<20	<20	<20	<20
p-Isopropyltoluene	1.0	nd	<10	<20	<20	<20	<20
1,3-Dichlorobenzene	1.0	nd	<10	<20	<20	<20	<20
1,4-Dichlorobenzene	1.0	nd	<10	<20	<20	<20	<20
n-Butylbenzene	1.0	nd	<10	<20	<20	<20	<20
1,2-Dichlorobenzene	1.0	nd	<10	<20	<20	<20	<20
1,2-Dibromo-3-Chloropropane	1.0	nd	<10	<20	<20	<20	<20
1,2,4-Trichlorobenzene	2.0	nd	<20	<40	<40	<40	<40
Hexachloro-1,3-butadiene	5.0	nd	<50	<100	<100	<100	<100
Naphthalene	5.0	nd	<50	<100	<100	<100	<100
1,2,3-Trichlorobenzene	5.0	nd	<50	<100	<100	<100	<100
<hr/>							
Surrogate Recovery							
Dibromofluoromethane	128	99	100	119	101	120	
1,2-Dichloroethane-d4	134	121	121	132	116	125	
Toluene-d8	115	118	77	69	118	66	
4-Bromofluorobenzene	66	83	78	76	77	86	

"J" Indicates analyte was positively identified. The reported result is an estimate.

"nd" Indicates not detected at listed detection limit.

"int" Indicates that interference prevents determination

\* ANALYZED BY SIM

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

# Libby Environmental, Inc.

ATI Acid Sump Investigation PROJECT  
 GSI Water Solutions  
 Albany, Oregon  
 Libby Project # L210720-40

3322 South Bay Road NE  
 Olympia, WA 98506  
 Phone: (360) 352-2110  
 FAX: (360) 352-4154  
 Email: libbyenv@gmail.com

## Volatile Organic Compounds by EPA Method 8260D in Water

Sample Description		GW-AS5-Initial	GW-AS2-Initial	GW-AS6-Initial	GW-AS7-Initial	GW-AS5-Bucket
Date Sampled	Reporting Limits	7/20/2021	7/20/2021	7/20/2021	7/20/2021	7/20/2021
Date Analyzed	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Dichlorodifluoromethane	2.0	<400	<400	<1000	<1000	<1000
Chloromethane	2.0	<400	<400	<1000	<1000	<1000
Vinyl chloride	0.2	460	220	<100	<100	<100
Bromomethane	2.0	<400	<400	<1000	<1000	<1000
Chloroethane	2.0	460	1600	<1000	<1000	<1000
Trichlorofluoromethane	2.0	<400	<400	<1000	<1000	<1000
1,1-Dichloroethene	0.5	27000	13000	4700	5400	8100
Methylene chloride	1.0	<200	<200	<500	<500	<500
Methyl <i>tert</i> - Butyl Ether (MTBE)	5.0	<1000	<1000	<2500	<2500	<2500
<i>trans</i> -1,2-Dichloroethene	1.0	<200	<200	<500	<500	<500
1,1-Dichloroethane	1.0	14000	11000	39000	5000	6300
2,2-Dichloropropane	2.0	<400	<400	<1000	<1000	<1000
<i>cis</i> -1,2-Dichloroethene	1.0	<200	<200	<500	<500	<500
Chloroform	1.0	<200	<200	<500	<500	<500
1,1,1-Trichloroethane (TCA)	1.0	82000	65000 E	210000	14000	56000
Carbon tetrachloride	1.0	<200	<200	<500	<500	<500
1,1-Dichloropropene	1.0	<200	<200	<500	<500	<500
Benzene	1.0	<200	<200	<500	<500	<500
1,2-Dichloroethane (EDC)	1.0	<200	<200	<500	<500	<500
Trichloroethene (TCE)	0.4	800	320	<200	<200	290
1,2-Dichloropropane	1.0	<200	<200	<500	<500	<500
Dibromomethane	1.0	<200	<200	<500	<500	<500
Bromodichloromethane	1.0	<200	<200	<500	<500	<500
<i>cis</i> -1,3-Dichloropropene	1.0	<200	<200	<500	<500	<500
Toluene	1.0	<200	<200	<500	<500	<500
Trans-1,3-Dichloropropene	1.0	<200	<200	<500	<500	<500
1,1,2-Trichloroethane	1.0	<200	<200	<500	<500	<500
Tetrachloroethene (PCE)	1.0	<200	<200	<500	<500	<500
1,3-Dichloropropane	1.0	<200	<200	<500	<500	<500
Dibromochloromethane	1.0	<200	<200	<500	<500	<500
1,2-Dibromoethane (EDB) *	0.01	<2.0	<2.0	<5.0	<5.0	<5.0
Chlorobenzene	1.0	<200	<200	<500	<500	<500
Ethylbenzene	1.0	<200	<200	<500	<500	<500
1,1,1,2-Tetrachloroethane	1.0	<200	<200	<500	<500	<500
Total Xylenes	2.0	<400	<400	<1000	<1000	<1000
Styrene	1.0	<200	<200	<500	<500	<500

# Libby Environmental, Inc.

ATI Acid Sump Investigation PROJECT  
 GSI Water Solutions  
 Albany, Oregon  
 Libby Project # L210720-40

3322 South Bay Road NE  
 Olympia, WA 98506  
 Phone: (360) 352-2110  
 FAX: (360) 352-4154  
 Email: libbyenv@gmail.com

## Volatile Organic Compounds by EPA Method 8260D in Water

Sample Description		GW-AS5-Initial	GW-AS2-Initial	GW-AS6-Initial	GW-AS7-Initial	GW-AS5-Bucket
Date Sampled	Reporting Limits	7/20/2021	7/20/2021	7/20/2021	7/20/2021	7/20/2021
Date Analyzed	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Bromoform	1.0	<200	<200	<500	<500	<500
Isopropylbenzene	4.0	<800	<800	<2000	<2000	<2000
1,1,2,2-Tetrachloroethane	1.0	<200	<200	<500	<500	<500
Bromobenzene	1.0	<200	<200	<500	<500	<500
n-Propylbenzene	1.0	<200	<200	<500	<500	<500
1,2,3-Trichloropropane	1.0	<200	<200	<500	<500	<500
2-Chlorotoluene	1.0	<200	<200	<500	<500	<500
1,3,5-Trimethylbenzene	1.0	<200	<200	<500	<500	<500
4-Chlorotoluene	1.0	<200	<200	<500	<500	<500
tert-Butylbenzene	1.0	<200	<200	<500	<500	<500
1,2,4-Trimethylbenzene	1.0	<200	<200	<500	<500	<500
sec-Butylbenzene	1.0	<200	<200	<500	<500	<500
p-Isopropyltoluene	1.0	<200	<200	<500	<500	<500
1,3-Dichlorobenzene	1.0	<200	<200	<500	<500	<500
1,4-Dichlorobenzene	1.0	<200	<200	<500	<500	<500
n-Butylbenzene	1.0	<200	<200	<500	<500	<500
1,2-Dichlorobenzene	1.0	<200	<200	<500	<500	<500
1,2-Dibromo-3-Chloropropane	1.0	<200	<200	<500	<500	<500
1,2,4-Trichlorobenzene	2.0	<400	<400	<1000	<1000	<1000
Hexachloro-1,3-butadiene	5.0	<1000	<1000	<2500	<2500	<2500
Naphthalene	5.0	<1000	<1000	<2500	<2500	<2500
1,2,3-Trichlorobenzene	5.0	<1000	<1000	<2500	<2500	<2500
<hr/>						
Surrogate Recovery						
Dibromofluoromethane		117	99	132	131	109
1,2-Dichloroethane-d4		123	110	133	134	121
Toluene-d8		66	75	67	72	66
4-Bromofluorobenzene		75	74	72	69	94

"E" Reported result is an estimate because it exceeds the calibration range.

"nd" Indicates not detected at listed detection limit.

"int" Indicates that interference prevents determination

\* ANALYZED BY SIM

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

# Libby Environmental, Inc.

ATI Acid Sump Investigation PROJECT  
 GSI Water Solutions  
 Albany, Oregon  
 Libby Project # L210720-40

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## QA/QC for Volatile Organic Compounds by EPA Method 8260D in Water

Matrix Spike Sample Identification: GW-AS3-5Min								
	Date Analyzed: 7/20/2021							
	Spiked Conc. ( $\mu\text{g/L}$ )	MS Response ( $\mu\text{g/L}$ )	MSD Response ( $\mu\text{g/L}$ )	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Dichlorodifluoromethane	5.0	4.2	4.2	84	84	0.0	65-135	
Chloromethane	5.0	4.2	4.1	84	82	2.4	65-135	
Vinyl chloride	5.0	4.4	5.1	88	102	14.7	65-135	
Bromomethane	5.0	4.4	4.5	88	90	2.2	65-135	
Chloroethane	5.0	9.0	0.0	180	0	200.0	65-135	S,F
Trichlorofluoromethane	5.0	4.5	4.6	90	92	2.2	65-135	
1,1-Dichloroethene	5.0	6.4	3.2	128	64	66.7	65-135	S,F
Methylene chloride	5.0	4.9	4.9	98	98	0.0	65-135	
Methyl <i>tert</i> -Butyl Ether (MTBE)	5.0	4.3	4.4	86	88	2.3	65-135	
<i>trans</i> -1,2-Dichloroethene	5.0	4.7	4.7	94	94	0.0	65-135	
1,1-Dichloroethane	5.0	0.0	0.0	0	0	#DIV/0!	65-135	S
2,2-Dichloropropane	5.0	5.2	5.4	104	108	3.8	65-135	
<i>cis</i> -1,2-Dichloroethene	5.0	4.6	4.6	92	92	0.0	65-135	
Chloroform	5.0	4.8	4.9	96	98	2.1	65-135	
1,1,1-Trichloroethane (TCA)	5.0	4.9	7.7	98	154	44.4	65-135	S,F
Carbon tetrachloride	5.0	5.1	5.2	102	104	1.9	65-135	
1,1-Dichloropropene	5.0	4.4	4.4	88	88	0.0	65-135	
Benzene	5.0	4.6	4.7	92	94	2.2	65-135	
1,2-Dichloroethane (EDC)	5.0	5.4	5.4	108	108	0.0	65-135	
Trichloroethene (TCE)	5.0	5.0	5.7	100	114	13.1	65-135	
1,2-Dichloropropane	5.0	3.8	3.0	76	60	23.5	65-135	S
Dibromomethane	5.0	5.9	3.5	118	70	51.1	65-135	F
Bromodichloromethane	5.0	4.0	3.8	80	76	5.1	65-135	
<i>cis</i> -1,3-Dichloropropene	5.0	2.0	2.0	40	40	0.0	65-135	S
Toluene	5.0	2.7	2.6	54	52	3.8	65-135	S
Trans-1,3-Dichloropropene	5.0	4.1	4.1	82	82	0.0	65-135	
1,1,2-Trichloroethane	5.0	6.6	6.4	132	128	3.1	65-135	
Tetrachloroethene (PCE)	5.0	4.0	3.8	80	76	5.1	65-135	
1,3-Dichloropropane	5.0	4.9	4.9	98	98	0.0	65-135	
Dibromochloromethane	5.0	6.1	5.8	122	116	5.0	65-135	
1,2-Dibromoethane (EDB)	5.0	5.2	5.0	104	100	3.9	65-135	
Chlorobenzene	5.0	4.7	4.7	94	94	0.0	65-135	
Ethylbenzene	5.0	3.9	4.2	78	84	7.4	65-135	
1,1,1,2-Tetrachloroethane	5.0	6.9	6.3	138	126	9.1	65-135	S
Total Xylenes	15.0	10.0	10.6	67	71	5.8	65-135	
Styrene	5.0	3.0	3.5	60	70	15.4	65-135	S

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## QA/QC for Volatile Organic Compounds by EPA Method 8260D in Water

Matrix Spike Sample Identification: GW-AS3-5Min								
	Date Analyzed: 7/20/2021							
	Spiked Conc. ( $\mu\text{g/L}$ )	MS Response ( $\mu\text{g/L}$ )	MSD Response ( $\mu\text{g/L}$ )	MS Recovery (%)	MSD Recovery (%)	RPD	Limits Recovery (%)	Data Flag
Bromoform	5.0	2.2	5.2	44	104	81.1	65-135	S,F
Isopropylbenzene	5.0	3.2	3.4	64	68	6.1	65-135	S
1,1,2,2-Tetrachloroethane	5.0	6.9	7.5	138	150	8.3	65-135	S
Bromobenzene	5.0	4.6	4.8	92	96	4.3	65-135	
n-Propylbenzene	5.0	4.6	5.0	92	100	8.3	65-135	
1,2,3-Trichloropropane	5.0	6.9	7.0	138	140	1.4	65-135	S
2-Chlorotoluene	5.0	4.5	4.7	90	94	4.3	65-135	
1,3,5-Trimethylbenzene	5.0	3.9	4.2	78	84	7.4	65-135	
4-Chlorotoluene	5.0	4.5	5.2	90	104	14.4	65-135	
tert-Butylbenzene	5.0	3.4	3.9	68	78	13.7	65-135	
1,2,4-Trimethylbenzene	5.0	3.8	4.4	76	88	14.6	65-135	
sec-Butylbenzene	5.0	4.3	4.7	86	94	8.9	65-135	
Isopropyltoluene	5.0	3.5	3.8	70	76	8.2	65-135	
1,3-Dichlorobenzene	5.0	5.1	5.1	102	102	0.0	65-135	
1,4-Dichlorobenzene	5.0	5.3	5.2	106	104	1.9	65-135	
n-Butylbenzene	5.0	4.4	4.8	88	96	8.7	65-135	
1,2-Dichlorobenzene	5.0	4.7	5.1	94	102	8.2	65-135	
1,2-Dibromo-3-Chloropropane	5.0	5.3	6.1	106	122	14.0	65-135	
1,2,4-Trichlorobenzene	5.0	4.6	4.7	92	94	2.2	65-135	
Hexachloro-1,3-butadiene	5.0	6.1	5.9	122	118	3.3	65-135	
Naphthalene	5.0	3.5	3.7	70	74	5.6	65-135	
1,2,3-Trichlorobenzene	5.0	5.5	5.3	110	106	3.7	65-135	
Surrogate Recovery (%)				MS	MSD			
Dibromofluoromethane				99	97		65-135	
1,2-Dichloroethane-d4				113	112		65-135	
Toluene-d8				71	74		65-135	
4-Bromofluorobenzene				109	111		65-135	

ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Paul Burke

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## Laboratory Control Sample

Date Analyzed: 7/20/2021					
	Spiked Conc. ( $\mu\text{g/L}$ )	LCS Response ( $\mu\text{g/L}$ )	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Dichlorodifluoromethane	5.0	4.8	96	80-120	
Chloromethane	5.0	5.0	100	80-120	
Vinyl chloride	5.0	5.2	104	80-120	
Bromomethane	5.0	4.7	94	80-120	
Chloroethane	5.0	6.0	120	80-120	
Trichlorofluoromethane	5.0	5.1	102	80-120	
1,1-Dichloroethene	5.0	5.5	110	80-120	
Methylene chloride	5.0	5.7	114	80-120	
Methyl <i>tert</i> -Butyl Ether (MTBE)	5.0	5.6	112	80-120	
<i>trans</i> -1,2-Dichloroethene	5.0	5.4	108	80-120	
1,1-Dichloroethane	5.0	5.7	114	80-120	
2,2-Dichloropropane	5.0	5.8	116	80-120	
<i>cis</i> -1,2-Dichloroethene	5.0	5.0	100	80-120	
Chloroform	5.0	5.3	106	80-120	
1,1,1-Trichloroethane (TCA)	5.0	5.3	106	80-120	
Carbon tetrachloride	5.0	5.3	106	80-120	
1,1-Dichloropropene	5.0	5.0	100	80-120	
Benzene	5.0	5.1	102	80-120	
1,2-Dichloroethane (EDC)	5.0	5.8	116	80-120	
Trichloroethene (TCE)	5.0	5.3	106	80-120	
1,2-Dichloropropane	5.0	5.9	118	80-120	
Dibromomethane	5.0	5.8	116	80-120	
Bromodichloromethane	5.0	5.9	118	80-120	
<i>cis</i> -1,3-Dichloropropene	5.0	5.6	112	80-120	
Toluene	5.0	4.9	98	80-120	
Trans-1,3-Dichloropropene	5.0	5.3	106	80-120	
1,1,2-Trichloroethane	5.0	5.9	118	80-120	
Tetrachloroethene (PCE)	5.0	5.4	108	80-120	
1,3-Dichloropropene	5.0	5.8	116	80-120	
Dibromochloromethane	5.0	5.9	118	80-120	
1,2-Dibromoethane (EDB)	5.0	5.9	118	80-120	
Chlorobenzene	5.0	4.8	96	80-120	
Ethylbenzene	5.0	4.3	86	80-120	
1,1,1,2-Tetrachloroethane	5.0	5.9	118	80-120	
Total Xylenes	15.0	13.2	88	80-120	
Styrene	5.0	4.6	92	80-120	

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## Laboratory Control Sample

Date Analyzed: GW-AS3-5Min					
	Spiked Conc. ( $\mu\text{g/L}$ )	LCS Response ( $\mu\text{g/L}$ )	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Bromoform	5.0	5.6	112	80-120	
Isopropylbenzene	5.0	4.1	82	80-120	
1,1,2,2-Tetrachloroethane	5.0	5.9	118	80-120	
Bromobenzene	5.0	4.9	98	80-120	
n-Propylbenzene	5.0	4.6	92	80-120	
1,2,3-Trichloropropane	5.0	5.5	110	80-120	
2-Chlorotoluene	5.0	4.7	94	80-120	
1,3,5-Trimethylbenzene	5.0	4.2	84	80-120	
4-Chlorotoluene	5.0	4.6	92	80-120	
tert-Butylbenzene	5.0	4.4	88	80-120	
1,2,4-Trimethylbenzene	5.0	4.4	88	80-120	
sec-Butylbenzene	5.0	4.5	90	80-120	
Isopropyltoluene	5.0	4.0	80	80-120	
1,3-Dichlorobenzene	5.0	5.5	110	80-120	
1,4-Dichlorobenzene	5.0	5.7	114	80-120	
n-Butylbenzene	5.0	4.6	92	80-120	
1,2-Dichlorobenzene	5.0	5.1	102	80-120	
1,2-Dibromo-3-Chloropropane	5.0	5.0	100	80-120	
1,2,4-Trichlorobenzene	5.0	5.3	106	80-120	
Hexachloro-1,3-butadiene	5.0	5.9	118	80-120	
Naphthalene	5.0	5.0	100	80-120	
1,2,3-Trichlorobenzene	5.0	6.0	120	80-120	
Surrogate Recovery					
Dibromofluoromethane		94	65-135		
1,2-Dichloroethane-d4		127	65-135		
Toluene-d8		109	65-135		
4-Bromofluorobenzene		85	65-135		

ANALYSES PERFORMED BY: Paul Burke

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## Volatile Organic Compounds by EPA Method 8260D in Water

Sample Description	Method Blank	GW-AS5-Overnight	GW-AS7-Overnight	GW-AS7-Overnight Dup	GW-AS6-Overnight	Gw-AS2-Overnight
Date Sampled	Reporting N/A	7/21/2020	7/21/2020	7/21/2020	7/21/2021	7/21/2021
Date Analyzed	Limits 7/21/2021	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Dichlorodifluoromethane	2.0	nd	<1000	<1000	<1000	<400
Chloromethane	2.0	nd	680	<1000	<1000	<400
Vinyl chloride	0.2	nd	<100	<100	<100	300
Bromomethane	2.0	nd	<1000	<1000	<1000	<400
Chloroethane	2.0	nd	<1000	<1000	<1000	3500
Trichlorofluoromethane	2.0	nd	<1000	<1000	<1000	<400
1,1-Dichloroethene	0.5	nd	16000	4000	3600	2300
Methylene chloride	1.0	nd	<500	<500	<500	<200
Methyl <i>tert</i> - Butyl Ether (MTBE)	5.0	nd	<2500	<2500	<2500	<1000
<i>trans</i> -1,2-Dichloroethene	1.0	nd	<500	<500	<500	<200
1,1-Dichloroethane	1.0	nd	20000	3400	3200	25000
2,2-Dichloropropane	2.0	nd	<1000	<1000	<1000	<400
<i>cis</i> -1,2-Dichloroethene	1.0	nd	<500	<500	<500	<200
Chloroform	1.0	nd	<500	<500	<500	<200
1,1,1-Trichloroethane (TCA)	1.0	nd	140000 E	9600	9900	120000 E
Carbon tetrachloride	1.0	nd	<500	<500	<500	<200
1,1-Dichloropropene	1.0	nd	<500	<500	<500	<200
Benzene	1.0	nd	<500	<500	<500	<200
1,2-Dichloroethane (EDC)	1.0	nd	<500	<500	<500	<200
Trichloroethene (TCE)	0.4	nd	650	<200	<200	350
1,2-Dichloropropane	1.0	nd	<500	<500	<500	<200
Dibromomethane	1.0	nd	<500	<500	<500	<200
Bromodichloromethane	1.0	nd	<500	<500	<500	<200
<i>cis</i> -1,3-Dichloropropene	1.0	nd	<500	<500	<500	<200
Toluene	1.0	nd	<500	<500	<500	<200
Trans-1,3-Dichloropropene	1.0	nd	<500	<500	<500	<200
1,1,2-Trichloroethane	1.0	nd	<500	<500	<500	<200
Tetrachloroethene (PCE)	1.0	nd	<500	<500	<500	<200
1,3-Dichloropropane	1.0	nd	<500	<500	<500	<200
Dibromochloromethane	1.0	nd	<500	<500	<500	<200
1,2-Dibromoethane (EDB) *	0.01	nd	<5.0	<5.0	<5.0	<2.0
Chlorobenzene	1.0	nd	<500	<500	<500	<200
Ethylbenzene	1.0	nd	<500	<500	<500	<200
1,1,1,2-Tetrachloroethane	1.0	nd	<500	<500	<500	<200
Total Xylenes	2.0	nd	<1000	<1000	<1000	<400
Styrene	1.0	nd	<500	<500	<500	<200

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## Volatile Organic Compounds by EPA Method 8260D in Water

Sample Description	Method	GW-AS5- Blank	GW-AS7- Overnight	GW-AS7- Overnight	GW-AS6- Overnight	Gw-AS2- Overnight
Date Sampled	Reporting	N/A	7/21/2020	7/21/2020	7/21/2020	7/21/2021
Date Analyzed	Limits	7/21/2021	7/21/2021	7/21/2021	7/21/2021	7/21/2021
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Bromoform	1.0	nd	<500	<500	<500	<200
Isopropylbenzene	4.0	nd	<2000	<2000	<2000	<800
1,1,2,2-Tetrachloroethane	1.0	nd	<500	<500	<500	<200
Bromobenzene	1.0	nd	<500	<500	<500	<200
n-Propylbenzene	1.0	nd	<500	<500	<500	<200
1,2,3-Trichloropropane	1.0	nd	<500	<500	<500	<200
2-Chlorotoluene	1.0	nd	<500	<500	<500	<200
1,3,5-Trimethylbenzene	1.0	nd	<500	<500	<500	<200
4-Chlorotoluene	1.0	nd	<500	<500	<500	<200
tert-Butylbenzene	1.0	nd	<500	<500	<500	<200
1,2,4-Trimethylbenzene	1.0	nd	<500	<500	<500	<200
sec-Butylbenzene	1.0	nd	<500	<500	<500	<200
p-Isopropyltoluene	1.0	nd	<500	<500	<500	<200
1,3-Dichlorobenzene	1.0	nd	<500	<500	<500	<200
1,4-Dichlorobenzene	1.0	nd	<500	<500	<500	<200
n-Butylbenzene	1.0	nd	<500	<500	<500	<200
1,2-Dichlorobenzene	1.0	nd	<500	<500	<500	<200
1,2-Dibromo-3-Chloropropane	1.0	nd	<500	<500	<500	<200
1,2,4-Trichlorobenzene	2.0	nd	<1000	<1000	<1000	<400
Hexachloro-1,3-butadiene	5.0	nd	<2500	<2500	<2500	<1000
Naphthalene	5.0	nd	<2500	<2500	<2500	<1000
1,2,3-Trichlorobenzene	5.0	nd	<2500	<2500	<2500	<1000
<hr/>						
Surrogate Recovery						
Dibromofluoromethane	94	97	97	97	96	96
1,2-Dichloroethane-d4	103	99	103	101	97	97
Toluene-d8	115	118	99	119	118	119
4-Bromofluorobenzene	72	72	85	69	70	93

"E" Reported result is an estimate because it exceeds the calibration range.

"nd" Indicates not detected at listed detection limit.

"int" Indicates that interference prevents determination

\* ANALYZED BY SIM

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

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## Volatile Organic Compounds by EPA Method 8260D in Water

Sample Description		GW-AS8- Initial	GW-AS9- Initial	GW-DUP-2- 0721	GW-AS10- Initial
Date Sampled	Reporting Limits	7/21/2021	7/21/2021	7/21/2021	7/21/2021
Date Analyzed	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Dichlorodifluoromethane	2.0	<200	<1000	<40	<40
Chloromethane	2.0	<200	<1000	<40	<40
Vinyl chloride	0.2	20	200	15	13
Bromomethane	2.0	<200	<1000	<40	<40
Chloroethane	2.0	<200	<1000	64	54
Trichlorofluoromethane	2.0	<200	<1000	<40	<40
1,1-Dichloroethene	0.5	300	4100	370	330
Methylene chloride	1.0	<100	<500	<20	<20
Methyl <i>tert</i> - Butyl Ether (MTBE)	5.0	<500	<2500	<100	<100
<i>trans</i> -1,2-Dichloroethene	1.0	<100	<500	<20	<20
1,1-Dichloroethane	1.0	3100	3900	1500	1400
2,2-Dichloropropane	2.0	<200	<1000	<40	<40
<i>cis</i> -1,2-Dichloroethene	1.0	<100	<500	<20	<20
Chloroform	1.0	<100	<500	<20	<20
1,1,1-Trichloroethane (TCA)	1.0	590	8000	360	340
Carbon tetrachloride	1.0	<100	<500	<20	<20
1,1-Dichloropropene	1.0	<100	<500	<20	<20
Benzene	1.0	<100	<500	<20	<20
1,2-Dichloroethane (EDC)	1.0	<100	<500	<20	<20
Trichloroethene (TCE)	0.4	<40	<200	<8.0	<8.0
1,2-Dichloropropane	1.0	<100	<500	<20	<20
Dibromomethane	1.0	<100	<500	<20	<20
Bromodichloromethane	1.0	<100	<500	<20	<20
<i>cis</i> -1,3-Dichloropropene	1.0	<100	<500	<20	<20
Toluene	1.0	<100	<500	<20	<20
Trans-1,3-Dichloropropene	1.0	<100	<500	<20	<20
1,1,2-Trichloroethane	1.0	<100	<500	<20	<20
Tetrachloroethene (PCE)	1.0	<100	<500	<20	<20
1,3-Dichloropropane	1.0	<100	<500	<20	<20
Dibromochloromethane	1.0	<100	<500	<20	<20
1,2-Dibromoethane (EDB) *	0.01	<1.0	<5.0	<0.2	<0.2
Chlorobenzene	1.0	<100	<500	<20	<20
Ethylbenzene	1.0	<100	<500	<20	<20
1,1,1,2-Tetrachloroethane	1.0	<100	<500	<20	<20
Total Xylenes	2.0	<200	<1000	<40	<40
Styrene	1.0	<100	<500	<20	<20

# Libby Environmental, Inc.

ATI Acid Sump Investigation PROJECT  
 GSI Water Solutions  
 Albany, Oregon  
 Libby Project # L210721-40  
 Client Project # 168.031.002

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 Olympia, WA 98506  
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## Volatile Organic Compounds by EPA Method 8260D in Water

Sample Description		GW-AS8- Initial	GW-AS9- Initial	GW-DUP-2- 0721	GW-AS10- Initial
Date Sampled	Reporting	7/21/2021	7/21/2021	7/21/2021	7/21/2021
Date Analyzed	Limits (µg/L)	7/21/2021	7/21/2021	7/21/2021	7/21/2021
Bromoform	1.0	<100	<500	<20	<20
Isopropylbenzene	4.0	<400	<2000	<80	<80
1,1,2,2-Tetrachloroethane	1.0	<100	<500	<20	<20
Bromobenzene	1.0	<100	<500	<20	<20
n-Propylbenzene	1.0	<100	<500	<20	<20
1,2,3-Trichloropropane	1.0	<100	<500	<20	<20
2-Chlorotoluene	1.0	<100	<500	<20	<20
1,3,5-Trimethylbenzene	1.0	<100	<500	<20	<20
4-Chlorotoluene	1.0	<100	<500	<20	<20
tert-Butylbenzene	1.0	<100	<500	<20	<20
1,2,4-Trimethylbenzene	1.0	<100	<500	<20	<20
sec-Butylbenzene	1.0	<100	<500	<20	<20
p-Isopropyltoluene	1.0	<100	<500	<20	<20
1,3-Dichlorobenzene	1.0	<100	<500	<20	<20
1,4-Dichlorobenzene	1.0	<100	<500	<20	<20
n-Butylbenzene	1.0	<100	<500	<20	<20
1,2-Dichlorobenzene	1.0	<100	<500	<20	<20
1,2-Dibromo-3-Chloropropane	1.0	<100	<500	<20	<20
1,2,4-Trichlorobenzene	2.0	<200	<1000	<40	<40
Hexachloro-1,3-butadiene	5.0	<500	<2500	<100	<100
Naphthalene	5.0	<500	<2500	<100	<100
1,2,3-Trichlorobenzene	5.0	<500	<2500	<100	<100
<hr/>					
Surrogate Recovery					
Dibromofluoromethane		93	94	98	95
1,2-Dichloroethane-d4		98	100	106	99
Toluene-d8		114	95	67	73
4-Bromofluorobenzene		88	88	87	91

"E" Reported result is an estimate because it exceeds the calibration range.

"nd" Indicates not detected at listed detection limit.

"int" Indicates that interference prevents determination

\* ANALYZED BY SIM

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

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## Volatile Organic Compounds by EPA Method 8260D in Soi

Sample Description	Method	AS2-12.2- Blank	AS2-12.2- 12.7	AS2-12.2- 12.7 Dup	AS2-12.7- 13.2	AS2-13.2- 13.7
Date Sampled	Reporting	N/A	7/20/2020	7/20/2020	7/21/2021	7/20/2020
Date Analyzed	Limits (mg/kg)	7/21/2021 (mg/kg)	7/21/2021 (mg/kg)	7/21/2021 (mg/kg)	7/21/2021 (mg/kg)	7/21/2021 (mg/kg)
Dichlorodifluoromethane	0.06	nd	<1.2	<1.2	<0.6	<0.6
Chloromethane	0.06	nd	<1.2	<1.2	<0.6	<0.6
Vinyl chloride	0.02	nd	<0.4	<0.4	<0.2	<0.2
Bromomethane	0.09	nd	<1.8	<1.8	<0.9	<0.9
Chloroethane	0.06	nd	<1.2	<1.2	<0.6	0.37
Trichlorofluoromethane	0.05	nd	<1.0	<1.0	<0.5	<0.5
1,1-Dichloroethene	0.05	nd	2.1	1.8	2.2	1.4
Methylene chloride	0.02	nd	<0.4	<0.4	<0.2	<0.2
Methyl <i>tert</i> - Butyl Ether (MTBE)	0.05	nd	<1.0	<1.0	<0.5	<0.5
<i>trans</i> -1,2-Dichloroethene	0.03	nd	<0.6	<0.6	<0.3	<0.3
1,1-Dichloroethane	0.03	nd	0.91	0.78	1.5	4.8
2,2-Dichloropropane	0.05	nd	<1.0	<1.0	<0.5	<0.5
<i>cis</i> -1,2-Dichloroethene	0.03	nd	<0.6	<0.6	<0.3	<0.3
Chloroform	0.03	nd	<0.6	<0.6	<0.3	<0.3
1,1,1-Trichloroethane (TCA)	0.03	nd	12	12	16	22
Carbon tetrachloride	0.03	nd	<0.6	<0.6	<0.3	<0.3
1,1-Dichloropropene	0.03	nd	<0.6	<0.6	<0.3	<0.3
Benzene	0.02	nd	<0.4	<0.4	<0.2	<0.2
1,2-Dichloroethane (EDC)	0.03	nd	<0.6	<0.6	<0.3	<0.3
Trichloroethene (TCE)	0.02	nd	<0.4	<0.4	<0.2	<0.2
1,2-Dichloropropane	0.03	nd	<0.6	<0.6	<0.3	<0.3
Dibromomethane	0.04	nd	<0.8	<0.8	<0.4	<0.4
Bromodichloromethane	0.03	nd	<0.6	<0.6	<0.3	<0.3
<i>cis</i> -1,3-Dichloropropene	0.03	nd	<0.6	<0.6	<0.3	<0.3
Toluene	0.10	nd	<2.0	<2.0	<1.0	<1.0
Trans-1,3-Dichloropropene	0.03	nd	<0.6	<0.6	<0.3	<0.3
1,1,2-Trichloroethane	0.03	nd	<0.6	<0.6	<0.3	<0.3
Tetrachloroethene (PCE)	0.03	nd	<0.6	<0.6	<0.3	<0.3
1,3-Dichloropropane	0.05	nd	<1.0	<1.0	<0.5	<0.5
Dibromochloromethane	0.03	nd	<0.6	<0.6	<0.3	<0.3
1,2-Dibromoethane (EDB) *	0.005	nd	<0.1	<0.1	<0.05	<0.05
Chlorobenzene	0.03	nd	<0.6	<0.6	<0.3	<0.3
Ethylbenzene	0.05	nd	<1.0	<1.0	<0.5	<0.5
1,1,1,2-Tetrachloroethane	0.05	nd	<1.0	<1.0	<0.5	<0.5
Total Xylenes	0.15	nd	<3.0	<3.0	<1.5	<1.5
Styrene	0.03	nd	<0.6	<0.6	<0.3	<0.3

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## Volatile Organic Compounds by EPA Method 8260D in Soi

Sample Description	Method	AS2-12.2- Blank	AS2-12.2- 12.7 Dup	AS2-12.7- 13.2	AS2-13.2- 13.7
Date Sampled	Reporting	N/A	7/19/2020	7/19/2020	7/21/2021
Date Analyzed	Limits (mg/kg)	7/21/2021	7/21/2021	7/21/2021	7/21/2021
Bromoform	0.15	nd	<3.0	<3.0	<1.5
Isopropylbenzene	0.05	nd	<1.0	<1.0	<0.5
1,1,2,2-Tetrachloroethane	0.15	nd	<3.0	<3.0	<1.5
Bromobenzene	0.04	nd	<0.8	<0.8	<0.4
n-Propylbenzene	0.04	nd	<0.8	<0.8	<0.4
1,2,3-Trichloropropane	0.04	nd	<0.8	<0.8	<0.4
2-Chlorotoluene	0.04	nd	<0.8	<0.8	<0.4
1,3,5-Trimethylbenzene	0.04	nd	<0.8	<0.8	<0.4
4-Chlorotoluene	0.04	nd	<0.8	<0.8	<0.4
tert-Butylbenzene	0.04	nd	<0.8	<0.8	<0.4
1,2,4-Trimethylbenzene	0.04	nd	<0.8	<0.8	<0.4
sec-Butylbenzene	0.04	nd	<0.8	<0.8	<0.4
p-Isopropyltoluene	0.04	nd	<0.8	<0.8	<0.4
1,3-Dichlorobenzene	0.04	nd	<0.8	<0.8	<0.4
1,4-Dichlorobenzene	0.04	nd	<0.8	<0.8	<0.4
n-Butylbenzene	0.04	nd	<0.8	<0.8	<0.4
1,2-Dichlorobenzene	0.04	nd	<0.8	<0.8	<0.4
1,2-Dibromo-3-Chloropropane	0.15	nd	<3.0	<3.0	<1.5
1,2,4-Trichlorobenzene	0.15	nd	<3.0	<3.0	<1.5
Hexachloro-1,3-butadiene	0.15	nd	<3.0	<3.0	<1.5
Naphthalene	0.15	nd	<3.0	<3.0	<1.5
1,2,3-Trichlorobenzene	0.15	nd	<3.0	<3.0	<1.5
<hr/>					
Surrogate Recovery					
Dibromofluoromethane	94	94	96	98	97
1,2-Dichloroethane-d4	103	102	106	103	107
Toluene-d8	115	114	116	117	117
4-Bromofluorobenzene	72	84	85	77	74

"nd" Indicates not detected at listed detection limit.

"int" Indicates that interference prevents determination

\* ANALYZED BY SIM

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

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## Volatile Organic Compounds by EPA Method 8260D in Soi

Sample Description	Method	AS2-12.2- Blank	AS2-12.2- 12.7	AS2-12.2- 12.7 Dup	AS2-12.7- 13.2	AS2-13.2- 13.7
Date Sampled	Reporting	N/A	7/20/2020	7/20/2020	7/21/2021	7/20/2020
Date Analyzed	Limits (mg/kg)	7/21/2021 (mg/kg)	7/21/2021 (mg/kg)	7/21/2021 (mg/kg)	7/21/2021 (mg/kg)	7/21/2021 (mg/kg)
Dichlorodifluoromethane	0.06	nd	<1.2	<1.2	<0.6	<0.6
Chloromethane	0.06	nd	<1.2	<1.2	<0.6	<0.6
Vinyl chloride	0.02	nd	<0.4	<0.4	<0.2	<0.2
Bromomethane	0.09	nd	<1.8	<1.8	<0.9	<0.9
Chloroethane	0.06	nd	<1.2	<1.2	<0.6	0.37
Trichlorofluoromethane	0.05	nd	<1.0	<1.0	<0.5	<0.5
1,1-Dichloroethene	0.05	nd	2.1	1.8	2.2	1.4
Methylene chloride	0.02	nd	<0.4	<0.4	<0.2	<0.2
Methyl <i>tert</i> - Butyl Ether (MTBE)	0.05	nd	<1.0	<1.0	<0.5	<0.5
<i>trans</i> -1,2-Dichloroethene	0.03	nd	<0.6	<0.6	<0.3	<0.3
1,1-Dichloroethane	0.03	nd	0.91	0.78	1.5	4.8
2,2-Dichloropropane	0.05	nd	<1.0	<1.0	<0.5	<0.5
<i>cis</i> -1,2-Dichloroethene	0.03	nd	<0.6	<0.6	<0.3	<0.3
Chloroform	0.03	nd	<0.6	<0.6	<0.3	<0.3
1,1,1-Trichloroethane (TCA)	0.03	nd	12	12	16	22
Carbon tetrachloride	0.03	nd	<0.6	<0.6	<0.3	<0.3
1,1-Dichloropropene	0.03	nd	<0.6	<0.6	<0.3	<0.3
Benzene	0.02	nd	<0.4	<0.4	<0.2	<0.2
1,2-Dichloroethane (EDC)	0.03	nd	<0.6	<0.6	<0.3	<0.3
Trichloroethene (TCE)	0.02	nd	<0.4	<0.4	<0.2	<0.2
1,2-Dichloropropane	0.03	nd	<0.6	<0.6	<0.3	<0.3
Dibromomethane	0.04	nd	<0.8	<0.8	<0.4	<0.4
Bromodichloromethane	0.03	nd	<0.6	<0.6	<0.3	<0.3
<i>cis</i> -1,3-Dichloropropene	0.03	nd	<0.6	<0.6	<0.3	<0.3
Toluene	0.10	nd	<2.0	<2.0	<1.0	<1.0
Trans-1,3-Dichloropropene	0.03	nd	<0.6	<0.6	<0.3	<0.3
1,1,2-Trichloroethane	0.03	nd	<0.6	<0.6	<0.3	<0.3
Tetrachloroethene (PCE)	0.03	nd	<0.6	<0.6	<0.3	<0.3
1,3-Dichloropropane	0.05	nd	<1.0	<1.0	<0.5	<0.5
Dibromochloromethane	0.03	nd	<0.6	<0.6	<0.3	<0.3
1,2-Dibromoethane (EDB) *	0.005	nd	<0.1	<0.1	<0.05	<0.05
Chlorobenzene	0.03	nd	<0.6	<0.6	<0.3	<0.3
Ethylbenzene	0.05	nd	<1.0	<1.0	<0.5	<0.5
1,1,1,2-Tetrachloroethane	0.05	nd	<1.0	<1.0	<0.5	<0.5
Total Xylenes	0.15	nd	<3.0	<3.0	<1.5	<1.5
Styrene	0.03	nd	<0.6	<0.6	<0.3	<0.3

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## Volatile Organic Compounds by EPA Method 8260D in Soi

Sample Description	Method	AS2-12.2- Blank	AS2-12.2- 12.7	AS2-12.2- 12.7 Dup	AS2-12.7- 13.2	AS2-13.2- 13.7
Date Sampled	Reporting	N/A	7/19/2020	7/19/2020	7/21/2021	7/21/2021
Date Analyzed	Limits (mg/kg)	7/21/2021	7/21/2021	7/21/2021	7/21/2021	7/21/2021
Bromoform	0.15	nd	<3.0	<3.0	<1.5	<1.5
Isopropylbenzene	0.05	nd	<1.0	<1.0	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.15	nd	<3.0	<3.0	<1.5	<1.5
Bromobenzene	0.04	nd	<0.8	<0.8	<0.4	<0.4
n-Propylbenzene	0.04	nd	<0.8	<0.8	<0.4	<0.4
1,2,3-Trichloropropane	0.04	nd	<0.8	<0.8	<0.4	<0.4
2-Chlorotoluene	0.04	nd	<0.8	<0.8	<0.4	<0.4
1,3,5-Trimethylbenzene	0.04	nd	<0.8	<0.8	<0.4	<0.4
4-Chlorotoluene	0.04	nd	<0.8	<0.8	<0.4	<0.4
tert-Butylbenzene	0.04	nd	<0.8	<0.8	<0.4	<0.4
1,2,4-Trimethylbenzene	0.04	nd	<0.8	<0.8	<0.4	<0.4
sec-Butylbenzene	0.04	nd	<0.8	<0.8	<0.4	<0.4
p-Isopropyltoluene	0.04	nd	<0.8	<0.8	<0.4	<0.4
1,3-Dichlorobenzene	0.04	nd	<0.8	<0.8	<0.4	<0.4
1,4-Dichlorobenzene	0.04	nd	<0.8	<0.8	<0.4	<0.4
n-Butylbenzene	0.04	nd	<0.8	<0.8	<0.4	<0.4
1,2-Dichlorobenzene	0.04	nd	<0.8	<0.8	<0.4	<0.4
1,2-Dibromo-3-Chloropropane	0.15	nd	<3.0	<3.0	<1.5	<1.5
1,2,4-Trichlorobenzene	0.15	nd	<3.0	<3.0	<1.5	<1.5
Hexachloro-1,3-butadiene	0.15	nd	<3.0	<3.0	<1.5	<1.5
Naphthalene	0.15	nd	<3.0	<3.0	<1.5	<1.5
1,2,3-Trichlorobenzene	0.15	nd	<3.0	<3.0	<1.5	<1.5
Surrogate Recovery						
Dibromofluoromethane		94	94	96	98	97
1,2-Dichloroethane-d4		103	102	106	103	107
Toluene-d8		115	114	116	117	117
4-Bromofluorobenzene		72	84	85	77	74

"nd" Indicates not detected at listed detection limit.

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## QA/QC for Volatile Organic Compounds by EPA Method 8260D in Water

Matrix Spike Sample Identification: GW-AS7-Overnight								
	Date Analyzed: 7/21/2021							
	Spiked Conc. ( $\mu\text{g/L}$ )	MS Response ( $\mu\text{g/L}$ )	MSD Response ( $\mu\text{g/L}$ )	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Dichlorodifluoromethane	5.0	4.8	5.1	96	102	6.1	65-135	
Chloromethane	5.0	4.1	4.5	82	90	9.3	65-135	
Vinyl chloride	5.0	4.4	4.7	88	94	6.6	65-135	
Bromomethane	5.0	4.2	4.8	84	96	13.3	65-135	
Chloroethane	5.0	4.8	5.6	96	112	15.4	65-135	
Trichlorofluoromethane	5.0	4.4	4.9	88	98	10.8	65-135	
1,1-Dichloroethene	5.0	4.1	4.8	82	96	15.7	65-135	
Methylene chloride	5.0	4.8	5.3	96	106	9.9	65-135	
Methyl <i>tert</i> -Butyl Ether (MTBE)	5.0	4.4	4.8	88	96	8.7	65-135	
<i>trans</i> -1,2-Dichloroethene	5.0	4.4	4.9	88	98	10.8	65-135	
1,1-Dichloroethane	5.0	4.9	5.9	98	118	18.5	65-135	
2,2-Dichloropropane	5.0	5.4	5.9	108	118	8.8	65-135	
<i>cis</i> -1,2-Dichloroethene	5.0	4.7	5.0	94	100	6.2	65-135	
Chloroform	5.0	4.9	5.5	98	110	11.5	65-135	
1,1,1-Trichloroethane (TCA)	5.0	3.1	2.1	62	42	38.5	65-135	S,R
Carbon tetrachloride	5.0	5.2	5.8	104	116	10.9	65-135	
1,1-Dichloropropene	5.0	4.2	4.8	84	96	13.3	65-135	
Benzene	5.0	4.6	5.1	92	102	10.3	65-135	
1,2-Dichloroethane (EDC)	5.0	5.1	5.6	102	112	9.3	65-135	
Trichloroethene (TCE)	5.0	5.4	5.8	108	116	7.1	65-135	
1,2-Dichloropropane	5.0	5.6	6.4	112	128	13.3	65-135	
Dibromomethane	5.0	6.0	6.8	120	136	12.5	65-135	S
Bromodichloromethane	5.0	5.7	6.4	114	128	11.6	65-135	
<i>cis</i> -1,3-Dichloropropene	5.0	5.7	6.2	114	124	8.4	65-135	
Toluene	5.0	5.2	5.4	104	108	3.8	65-135	
Trans-1,3-Dichloropropene	5.0	5.5	5.2	110	104	5.6	65-135	
1,1,2-Trichloroethane	5.0	6.8	6.8	136	136	0.0	65-135	S
Tetrachloroethene (PCE)	5.0	7.1	7.4	142	148	4.1	65-135	S
1,3-Dichloropropane	5.0	6.0	5.9	120	118	1.7	65-135	
Dibromochloromethane	5.0	7.4	7.3	148	146	1.4	65-135	S
1,2-Dibromoethane (EDB)	5.0	6.8	6.8	136	136	0.0	65-135	S
Chlorobenzene	5.0	5.5	5.9	110	118	7.0	65-135	
Ethylbenzene	5.0	4.6	5.0	92	100	8.3	65-135	
1,1,1,2-Tetrachloroethane	5.0	6.7	7.1	134	142	5.8	65-135	S
Total Xylenes	15.0	12.8	14.7	85	98	13.8	65-135	
Styrene	5.0	3.5	4.3	70	86	20.5	65-135	

# Libby Environmental, Inc.

ATI Acid Sump Investigation PROJECT  
 GSI Water Solutions  
 Albany, Oregon  
 Libby Project # L210721-40  
 Client Project # 168.031.002

3322 South Bay Road NE  
 Olympia, WA 98506  
 Phone: (360) 352-2110  
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 Email: libbyenv@gmail.com

## QA/QC for Volatile Organic Compounds by EPA Method 8260D in Water

Matrix Spike Sample Identification: GW-AS7-Overnight								
	Date Analyzed: 7/21/2021							
	Spiked Conc. ( $\mu\text{g/L}$ )	MS Response ( $\mu\text{g/L}$ )	MSD Response ( $\mu\text{g/L}$ )	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Bromoform	5.0	6.4	7.1	128	142	10.4	65-135	S
Isopropylbenzene	5.0	3.5	3.3	70	66	5.9	65-135	
1,1,2,2-Tetrachloroethane	5.0	6.7	7.2	134	144	7.2	65-135	S
Bromobenzene	5.0	5.6	6.1	112	122	8.5	65-135	
n-Propylbenzene	5.0	4.5	5.3	90	106	16.3	65-135	
1,2,3-Trichloropropane	5.0	6.6	7.0	132	140	5.9	65-135	S
2-Chlorotoluene	5.0	4.4	4.3	88	86	2.3	65-135	
1,3,5-Trimethylbenzene	5.0	4.2	4.2	84	84	0.0	65-135	
4-Chlorotoluene	5.0	4.2	4.8	84	96	13.3	65-135	
tert-Butylbenzene	5.0	4.0	4.2	80	84	4.9	65-135	
1,2,4-Trimethylbenzene	5.0	4.3	4.9	86	98	13.0	65-135	
sec-Butylbenzene	5.0	4.2	4.9	84	98	15.4	65-135	
Isopropyltoluene	5.0	3.7	4.2	74	84	12.7	65-135	
1,3-Dichlorobenzene	5.0	5.5	6.2	110	124	12.0	65-135	
1,4-Dichlorobenzene	5.0	5.5	6.2	110	124	12.0	65-135	
n-Butylbenzene	5.0	4.4	5.4	88	108	20.4	65-135	
1,2-Dichlorobenzene	5.0	5.1	6.0	102	120	16.2	65-135	
1,2-Dibromo-3-Chloropropane	5.0	6.6	8.4	132	168	24.0	65-135	S
1,2,4-Trichlorobenzene	5.0	5.0	6.9	100	138	31.9	65-135	
Hexachloro-1,3-butadiene	5.0	7.9	7.6	158	152	3.9	65-135	S
Naphthalene	5.0	3.6	5.1	72	102	34.5	65-135	
1,2,3-Trichlorobenzene	5.0	5.6	7.4	112	148	27.7	65-135	S
Surrogate Recovery (%)				MS	MSD			
Dibromofluoromethane				94	95		65-135	
1,2-Dichloroethane-d4				101	100		65-135	
Toluene-d8				118	118		65-135	
4-Bromofluorobenzene				84	80		65-135	

"S" Spike recovery outside acceptable recovery limits.

"R" High relative percent difference observed.

ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Paul Burke

# Libby Environmental, Inc.

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## Laboratory Control Sample

Date Analyzed: 7/21/2021					
	Spiked Conc. ( $\mu\text{g/L}$ )	LCS Response ( $\mu\text{g/L}$ )	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Dichlorodifluoromethane	5.0	4.3	86	80-120	
Chloromethane	5.0	4.5	90	80-120	
Vinyl chloride	5.0	4.2	84	80-120	
Bromomethane	5.0	4.2	84	80-120	
Chloroethane	5.0	5.0	100	80-120	
Trichlorofluoromethane	5.0	4.2	84	80-120	
1,1-Dichloroethene	5.0	4.2	84	80-120	
Methylene chloride	5.0	4.6	92	80-120	
Methyl <i>tert</i> -Butyl Ether (MTBE)	5.0	4.5	90	80-120	
<i>trans</i> -1,2-Dichloroethene	5.0	4.4	88	80-120	
1,1-Dichloroethane	5.0	5.2	104	80-120	
2,2-Dichloropropane	5.0	4.8	96	80-120	
<i>cis</i> -1,2-Dichloroethene	5.0	4.7	94	80-120	
Chloroform	5.0	4.5	90	80-120	
1,1,1-Trichloroethane (TCA)	5.0	4.6	92	80-120	
Carbon tetrachloride	5.0	4.6	92	80-120	
1,1-Dichloropropene	5.0	4.4	88	80-120	
Benzene	5.0	4.6	92	80-120	
1,2-Dichloroethane (EDC)	5.0	4.7	94	80-120	
Trichloroethene (TCE)	5.0	5.1	102	80-120	
1,2-Dichloropropane	5.0	5.5	110	80-120	
Dibromomethane	5.0	5.8	116	80-120	
Bromodichloromethane	5.0	5.2	104	80-120	
<i>cis</i> -1,3-Dichloropropene	5.0	5.6	112	80-120	
Toluene	5.0	4.8	96	80-120	
Trans-1,3-Dichloropropene	5.0	5.6	112	80-120	
1,1,2-Trichloroethane	5.0	5.8	116	80-120	
Tetrachloroethene (PCE)	5.0	5.9	118	80-120	
1,3-Dichloropropene	5.0	5.9	118	80-120	
Dibromochloromethane	5.0	5.8	116	80-120	
1,2-Dibromoethane (EDB)	5.0	5.7	114	80-120	
Chlorobenzene	5.0	5.9	118	80-120	
Ethylbenzene	5.0	4.9	98	80-120	
1,1,1,2-Tetrachloroethane	5.0	5.9	118	80-120	
Total Xylenes	15.0	13.5	90	80-120	
Styrene	5.0	4.4	88	80-120	

# Libby Environmental, Inc.

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## Laboratory Control Sample

Date Analyzed: GW-AS7-Overnight					
	Spiked Conc. ( $\mu\text{g/L}$ )	LCS Response ( $\mu\text{g/L}$ )	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Bromoform	5.0	5.6	112	80-120	
Isopropylbenzene	5.0	5.0	100	80-120	
1,1,2,2-Tetrachloroethane	5.0	5.8	116	80-120	
Bromobenzene	5.0	6.0	120	80-120	
n-Propylbenzene	5.0	5.0	100	80-120	
1,2,3-Trichloropropane	5.0	5.6	112	80-120	
2-Chlorotoluene	5.0	4.8	96	80-120	
1,3,5-Trimethylbenzene	5.0	4.4	88	80-120	
4-Chlorotoluene	5.0	4.7	94	80-120	
tert-Butylbenzene	5.0	4.1	82	80-120	
1,2,4-Trimethylbenzene	5.0	4.4	88	80-120	
sec-Butylbenzene	5.0	5.0	100	80-120	
Isopropyltoluene	5.0	4.3	86	80-120	
1,3-Dichlorobenzene	5.0	5.5	110	80-120	
1,4-Dichlorobenzene	5.0	5.8	116	80-120	
n-Butylbenzene	5.0	4.7	94	80-120	
1,2-Dichlorobenzene	5.0	5.8	116	80-120	
1,2-Dibromo-3-Chloropropane	5.0	5.6	112	80-120	
1,2,4-Trichlorobenzene	5.0	5.5	110	80-120	
Hexachloro-1,3-butadiene	5.0	6.0	120	80-120	
Naphthalene	5.0	4.7	94	80-120	
1,2,3-Trichlorobenzene	5.0	5.8	116	80-120	
Surrogate Recovery					
Dibromofluoromethane			89	65-135	
1,2-Dichloroethane-d4			96	65-135	
Toluene-d8			114	65-135	
4-Bromofluorobenzene			107	65-135	

ANALYSES PERFORMED BY: Paul Burke

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## QA/QC for Volatile Organic Compounds by EPA Method 8260D in Soil

Matrix Spike Sample Identification: AS2-12.2-12.7								
	Date Analyzed: 7/21/2021							
	Spiked Conc. (mg/kg)	MS Response (mg/kg)	MSD Response (mg/kg)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Dichlorodifluoromethane	0.25	0.23	0.23	92	92	0.0	65-135	
Chloromethane	0.25	0.20	0.21	80	84	4.9	65-135	
Vinyl chloride	0.25	0.21	0.22	84	88	4.7	65-135	
Bromomethane	0.25	0.21	0.20	84	80	4.9	65-135	
Chloroethane	0.25	0.19	0.19	76	76	0.0	65-135	
Trichlorofluoromethane	0.25	0.21	0.21	84	84	0.0	65-135	
1,1-Dichloroethene	0.25	0.22	0.22	88	88	0.0	65-135	
Methylene chloride	0.25	0.25	0.25	100	100	0.0	65-135	
Methyl <i>tert</i> -Butyl Ether (MTBE)	0.25	0.25	0.26	100	104	3.9	65-135	
<i>trans</i> -1,2-Dichloroethene	0.25	0.23	0.24	92	96	4.3	65-135	
1,1-Dichloroethane	0.25	0.27	0.29	108	116	7.1	65-135	
2,2-Dichloropropane	0.25	0.26	0.27	104	108	3.8	65-135	
<i>cis</i> -1,2-Dichloroethene	0.25	0.24	0.25	96	100	4.1	65-135	
Chloroform	0.25	0.25	0.25	100	100	0.0	65-135	
1,1,1-Trichloroethane (TCA)	0.25	0.32	0.23	128	92	32.7	65-135	
Carbon tetrachloride	0.25	0.27	0.26	108	104	3.8	65-135	
1,1-Dichloropropene	0.25	0.21	0.21	84	84	0.0	65-135	
Benzene	0.25	0.24	0.24	96	96	0.0	65-135	
1,2-Dichloroethane (EDC)	0.25	0.27	0.27	108	108	0.0	65-135	
Trichloroethene (TCE)	0.25	0.28	0.27	112	108	3.6	65-135	
1,2-Dichloropropane	0.25	0.20	0.21	80	84	4.9	65-135	
Dibromomethane	0.25	0.25	0.28	100	112	11.3	65-135	
Bromodichloromethane	0.25	0.24	0.24	96	96	0.0	65-135	
<i>cis</i> -1,3-Dichloropropene	0.25	0.13	0.13	52	52	0.0	65-135	S
Toluene	0.25	0.18	0.17	72	68	5.7	65-135	
Trans-1,3-Dichloropropene	0.25	0.22	0.21	88	84	4.7	65-135	
1,1,2-Trichloroethane	0.25	0.43	0.40	172	160	7.2	65-135	S
Tetrachloroethene (PCE)	0.25	0.28	0.27	112	108	3.6	65-135	
1,3-Dichloropropane	0.25	0.30	0.28	120	112	6.9	65-135	
Dibromochloromethane	0.25	0.40	0.37	160	148	7.8	65-135	S
1,2-Dibromoethane (EDB)	0.25	0.35	0.34	140	136	2.9	65-135	S
Chlorobenzene	0.25	0.28	0.29	112	116	3.5	65-135	
Ethylbenzene	0.25	0.23	0.23	92	92	0.0	65-135	
1,1,1,2-Tetrachloroethane	0.25	0.44	0.41	176	164	7.1	65-135	S
Total Xylenes	0.75	0.61	0.62	81	83	1.6	65-135	
Styrene	0.25	0.18	0.20	72	80	10.5	65-135	

# Libby Environmental, Inc.

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 GSI Water Solutions  
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 Client Project # 168.031.002

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## QA/QC for Volatile Organic Compounds by EPA Method 8260D in Soil

Matrix Spike Sample Identification: AS2-12.2-12.7								
	Date Analyzed: 7/21/2021							
	Spiked Conc. (mg/kg)	MS Response (mg/kg)	MSD Response (mg/kg)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Bromoform	0.25	0.47	0.43	188	172	8.9	65-135	S
Isopropylbenzene	0.25	0.18	0.21	72	84	15.4	65-135	
1,1,2,2-Tetrachloroethane	0.25	0.39	0.38	156	152	2.6	65-135	S
Bromobenzene	0.25	0.25	0.27	100	108	7.7	65-135	
n-Propylbenzene	0.25	0.20	0.23	80	92	14.0	65-135	
1,2,3-Trichloropropane	0.25	0.42	0.38	168	152	10.0	65-135	S
2-Chlorotoluene	0.25	0.19	0.20	76	80	5.1	65-135	
1,3,5-Trimethylbenzene	0.25	0.18	0.19	72	76	5.4	65-135	
4-Chlorotoluene	0.25	0.19	0.22	76	88	14.6	65-135	
tert-Butylbenzene	0.25	0.16	0.18	64	72	11.8	65-135	
1,2,4-Trimethylbenzene	0.25	0.18	0.20	72	80	10.5	65-135	
sec-Butylbenzene	0.25	0.20	0.22	80	88	9.5	65-135	
Isopropyltoluene	0.25	0.17	0.18	68	72	5.7	65-135	
1,3-Dichlorobenzene	0.25	0.26	0.27	104	108	3.8	65-135	
1,4-Dichlorobenzene	0.25	0.28	0.27	112	108	3.6	65-135	
n-Butylbenzene	0.25	0.18	0.22	72	88	20.0	65-135	
1,2-Dichlorobenzene	0.25	0.25	0.27	100	108	7.7	65-135	
1,2-Dibromo-3-Chloropropane	0.25	0.39	0.45	156	180	14.3	65-135	S
1,2,4-Trichlorobenzene	0.25	0.25	0.29	100	116	14.8	65-135	
Hexachloro-1,3-butadiene	0.25	0.35	0.35	140	140	0.0	65-135	S
Naphthalene	0.25	0.24	0.28	96	112	15.4	65-135	
1,2,3-Trichlorobenzene	0.25	0.33	0.34	132	136	3.0	65-135	S
Surrogate Recovery (%)				MS	MSD			
Dibromofluoromethane				103	103		65-135	
1,2-Dichloroethane-d4				112	109		65-135	
Toluene-d8				67	68		65-135	
4-Bromofluorobenzene				106	112		65-135	

"S" Spike recovery outside acceptable recovery limits.

"R" High relative percent difference observed.

ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Paul Burke

# Libby Environmental, Inc.

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GSI Water Solutions  
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## Laboratory Control Sample

Date Analyzed: 7/21/2021

	Spiked Conc. (mg/kg)	LCS Response (mg/kg)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Dichlorodifluoromethane	0.25	0.22	88	80-120	
Chloromethane	0.25	0.22	88	80-120	
Vinyl chloride	0.25	0.21	84	80-120	
Bromomethane	0.25	0.21	84	80-120	
Chloroethane	0.25	0.25	100	80-120	
Trichlorofluoromethane	0.25	0.21	84	80-120	
1,1-Dichloroethene	0.25	0.21	84	80-120	
Methylene chloride	0.25	0.23	92	80-120	
Methyl <i>tert</i> - Butyl Ether (MTBE)	0.25	0.23	92	80-120	
<i>trans</i> -1,2-Dichloroethene	0.25	0.22	88	80-120	
1,1-Dichloroethane	0.25	0.26	104	80-120	
2,2-Dichloropropane	0.25	0.24	96	80-120	
<i>cis</i> -1,2-Dichloroethene	0.25	0.24	96	80-120	
Chloroform	0.25	0.23	92	80-120	
1,1,1-Trichloroethane (TCA)	0.25	0.23	92	80-120	
Carbon tetrachloride	0.25	0.23	92	80-120	
1,1-Dichloropropene	0.25	0.22	88	80-120	
Benzene	0.25	0.23	92	80-120	
1,2-Dichloroethane (EDC)	0.25	0.23	92	80-120	
Trichloroethene (TCE)	0.25	0.26	104	80-120	
1,2-Dichloropropane	0.25	0.28	112	80-120	
Dibromomethane	0.25	0.29	116	80-120	
Bromodichloromethane	0.25	0.26	104	80-120	
<i>cis</i> -1,3-Dichloropropene	0.25	0.28	112	80-120	
Toluene	0.25	0.24	96	80-120	
Trans-1,3-Dichloropropene	0.25	0.28	112	80-120	
1,1,2-Trichloroethane	0.25	0.29	116	80-120	
Tetrachloroethene (PCE)	0.25	0.29	116	80-120	
1,3-Dichloropropane	0.25	0.29	116	80-120	
Dibromochloromethane	0.25	0.29	116	80-120	
1,2-Dibromoethane (EDB)	0.25	0.29	116	80-120	
Chlorobenzene	0.25	0.30	120	80-120	
Ethylbenzene	0.25	0.24	96	80-120	
1,1,1,2-Tetrachloroethane	0.25	0.30	120	80-120	
Total Xylenes	0.75	0.68	91	80-120	
Styrene	0.25	0.22	88	80-120	

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## Laboratory Control Sample

Date Analyzed: 7/21/2021

	Spiked Conc. (mg/kg)	LCS Response (mg/kg)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Bromoform	0.25	0.29	116	80-120	
Isopropylbenzene	0.25	0.25	100	80-120	
1,1,2,2-Tetrachloroethane	0.25	0.29	116	80-120	
Bromobenzene	0.25	0.30	120	80-120	
n-Propylbenzene	0.25	0.25	100	80-120	
1,2,3-Trichloropropane	0.25	0.28	112	80-120	
2-Chlorotoluene	0.25	0.24	96	80-120	
1,3,5-Trimethylbenzene	0.25	0.22	88	80-120	
4-Chlorotoluene	0.25	0.24	96	80-120	
tert-Butylbenzene	0.25	0.21	84	80-120	
1,2,4-Trimethylbenzene	0.25	0.22	88	80-120	
sec-Butylbenzene	0.25	0.25	100	80-120	
Isopropyltoluene	0.25	0.21	84	80-120	
1,3-Dichlorobenzene	0.25	0.28	112	80-120	
1,4-Dichlorobenzene	0.25	0.29	116	80-120	
n-Butylbenzene	0.25	0.24	96	80-120	
1,2-Dichlorobenzene	0.25	0.29	116	80-120	
1,2-Dibromo-3-Chloropropane	0.25	0.28	112	80-120	
1,2,4-Trichlorobenzene	0.25	0.27	108	80-120	
Hexachloro-1,3-butadiene	0.25	0.30	120	80-120	
Naphthalene	0.25	0.23	92	80-120	
1,2,3-Trichlorobenzene	0.25	0.29	116	80-120	

### Surrogate Recovery

Dibromofluoromethane	89	65-135
1,2-Dichloroethane-d4	96	65-135
Toluene-d8	114	65-135
4-Bromofluorobenzene	107	65-135

ANALYSES PERFORMED BY: Paul Burke

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## QA/QC for Volatile Organic Compounds by EPA Method 8260D in Soil

Matrix Spike Sample Identification: AS2-12.2-12.7								
	Date Analyzed: 7/21/2021							
	Spiked Conc. (mg/kg)	MS Response (mg/kg)	MSD Response (mg/kg)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Dichlorodifluoromethane	0.25	0.23	0.23	92	92	0.0	65-135	
Chloromethane	0.25	0.20	0.21	80	84	4.9	65-135	
Vinyl chloride	0.25	0.21	0.22	84	88	4.7	65-135	
Bromomethane	0.25	0.21	0.20	84	80	4.9	65-135	
Chloroethane	0.25	0.19	0.19	76	76	0.0	65-135	
Trichlorofluoromethane	0.25	0.21	0.21	84	84	0.0	65-135	
1,1-Dichloroethene	0.25	0.22	0.22	88	88	0.0	65-135	
Methylene chloride	0.25	0.25	0.25	100	100	0.0	65-135	
Methyl <i>tert</i> -Butyl Ether (MTBE)	0.25	0.25	0.26	100	104	3.9	65-135	
<i>trans</i> -1,2-Dichloroethene	0.25	0.23	0.24	92	96	4.3	65-135	
1,1-Dichloroethane	0.25	0.27	0.29	108	116	7.1	65-135	
2,2-Dichloropropane	0.25	0.26	0.27	104	108	3.8	65-135	
<i>cis</i> -1,2-Dichloroethene	0.25	0.24	0.25	96	100	4.1	65-135	
Chloroform	0.25	0.25	0.25	100	100	0.0	65-135	
1,1,1-Trichloroethane (TCA)	0.25	0.32	0.23	128	92	32.7	65-135	
Carbon tetrachloride	0.25	0.27	0.26	108	104	3.8	65-135	
1,1-Dichloropropene	0.25	0.21	0.21	84	84	0.0	65-135	
Benzene	0.25	0.24	0.24	96	96	0.0	65-135	
1,2-Dichloroethane (EDC)	0.25	0.27	0.27	108	108	0.0	65-135	
Trichloroethene (TCE)	0.25	0.28	0.27	112	108	3.6	65-135	
1,2-Dichloropropane	0.25	0.20	0.21	80	84	4.9	65-135	
Dibromomethane	0.25	0.25	0.28	100	112	11.3	65-135	
Bromodichloromethane	0.25	0.24	0.24	96	96	0.0	65-135	
<i>cis</i> -1,3-Dichloropropene	0.25	0.13	0.13	52	52	0.0	65-135	S
Toluene	0.25	0.18	0.17	72	68	5.7	65-135	
Trans-1,3-Dichloropropene	0.25	0.22	0.21	88	84	4.7	65-135	
1,1,2-Trichloroethane	0.25	0.43	0.40	172	160	7.2	65-135	S
Tetrachloroethene (PCE)	0.25	0.28	0.27	112	108	3.6	65-135	
1,3-Dichloropropane	0.25	0.30	0.28	120	112	6.9	65-135	
Dibromochloromethane	0.25	0.40	0.37	160	148	7.8	65-135	S
1,2-Dibromoethane (EDB)	0.25	0.35	0.34	140	136	2.9	65-135	S
Chlorobenzene	0.25	0.28	0.29	112	116	3.5	65-135	
Ethylbenzene	0.25	0.23	0.23	92	92	0.0	65-135	
1,1,1,2-Tetrachloroethane	0.25	0.44	0.41	176	164	7.1	65-135	S
Total Xylenes	0.75	0.61	0.62	81	83	1.6	65-135	
Styrene	0.25	0.18	0.20	72	80	10.5	65-135	

# Libby Environmental, Inc.

ATI Acid Sump Investigation PROJECT  
 GSI Water Solutions  
 Albany, Oregon  
 Libby Project # L210721-40  
 Client Project # 168.031.002

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## QA/QC for Volatile Organic Compounds by EPA Method 8260D in Soil

Matrix Spike Sample Identification: AS2-12.2-12.7								
	Date Analyzed: 7/21/2021							
	Spiked Conc. (mg/kg)	MS Response (mg/kg)	MSD Response (mg/kg)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Bromoform	0.25	0.47	0.43	188	172	8.9	65-135	S
Isopropylbenzene	0.25	0.18	0.21	72	84	15.4	65-135	
1,1,2,2-Tetrachloroethane	0.25	0.39	0.38	156	152	2.6	65-135	S
Bromobenzene	0.25	0.25	0.27	100	108	7.7	65-135	
n-Propylbenzene	0.25	0.20	0.23	80	92	14.0	65-135	
1,2,3-Trichloropropane	0.25	0.42	0.38	168	152	10.0	65-135	S
2-Chlorotoluene	0.25	0.19	0.20	76	80	5.1	65-135	
1,3,5-Trimethylbenzene	0.25	0.18	0.19	72	76	5.4	65-135	
4-Chlorotoluene	0.25	0.19	0.22	76	88	14.6	65-135	
tert-Butylbenzene	0.25	0.16	0.18	64	72	11.8	65-135	
1,2,4-Trimethylbenzene	0.25	0.18	0.20	72	80	10.5	65-135	
sec-Butylbenzene	0.25	0.20	0.22	80	88	9.5	65-135	
Isopropyltoluene	0.25	0.17	0.18	68	72	5.7	65-135	
1,3-Dichlorobenzene	0.25	0.26	0.27	104	108	3.8	65-135	
1,4-Dichlorobenzene	0.25	0.28	0.27	112	108	3.6	65-135	
n-Butylbenzene	0.25	0.18	0.22	72	88	20.0	65-135	
1,2-Dichlorobenzene	0.25	0.25	0.27	100	108	7.7	65-135	
1,2-Dibromo-3-Chloropropane	0.25	0.39	0.45	156	180	14.3	65-135	S
1,2,4-Trichlorobenzene	0.25	0.25	0.29	100	116	14.8	65-135	
Hexachloro-1,3-butadiene	0.25	0.35	0.35	140	140	0.0	65-135	S
Naphthalene	0.25	0.24	0.28	96	112	15.4	65-135	
1,2,3-Trichlorobenzene	0.25	0.33	0.34	132	136	3.0	65-135	S
Surrogate Recovery (%)				MS	MSD			
Dibromofluoromethane				103	103		65-135	
1,2-Dichloroethane-d4				112	109		65-135	
Toluene-d8				67	68		65-135	
4-Bromofluorobenzene				106	112		65-135	

"S" Spike recovery outside acceptable recovery limits.

"R" High relative percent difference observed.

ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Paul Burke

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## Laboratory Control Sample

Date Analyzed: 7/21/2021

	Spiked Conc. (mg/kg)	LCS Response (mg/kg)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Dichlorodifluoromethane	0.25	0.22	88	80-120	
Chloromethane	0.25	0.22	88	80-120	
Vinyl chloride	0.25	0.21	84	80-120	
Bromomethane	0.25	0.21	84	80-120	
Chloroethane	0.25	0.25	100	80-120	
Trichlorofluoromethane	0.25	0.21	84	80-120	
1,1-Dichloroethene	0.25	0.21	84	80-120	
Methylene chloride	0.25	0.23	92	80-120	
Methyl <i>tert</i> - Butyl Ether (MTBE)	0.25	0.23	92	80-120	
<i>trans</i> -1,2-Dichloroethene	0.25	0.22	88	80-120	
1,1-Dichloroethane	0.25	0.26	104	80-120	
2,2-Dichloropropane	0.25	0.24	96	80-120	
<i>cis</i> -1,2-Dichloroethene	0.25	0.24	96	80-120	
Chloroform	0.25	0.23	92	80-120	
1,1,1-Trichloroethane (TCA)	0.25	0.23	92	80-120	
Carbon tetrachloride	0.25	0.23	92	80-120	
1,1-Dichloropropene	0.25	0.22	88	80-120	
Benzene	0.25	0.23	92	80-120	
1,2-Dichloroethane (EDC)	0.25	0.23	92	80-120	
Trichloroethene (TCE)	0.25	0.26	104	80-120	
1,2-Dichloropropane	0.25	0.28	112	80-120	
Dibromomethane	0.25	0.29	116	80-120	
Bromodichloromethane	0.25	0.26	104	80-120	
<i>cis</i> -1,3-Dichloropropene	0.25	0.28	112	80-120	
Toluene	0.25	0.24	96	80-120	
Trans-1,3-Dichloropropene	0.25	0.28	112	80-120	
1,1,2-Trichloroethane	0.25	0.29	116	80-120	
Tetrachloroethene (PCE)	0.25	0.29	116	80-120	
1,3-Dichloropropane	0.25	0.29	116	80-120	
Dibromochloromethane	0.25	0.29	116	80-120	
1,2-Dibromoethane (EDB)	0.25	0.29	116	80-120	
Chlorobenzene	0.25	0.30	120	80-120	
Ethylbenzene	0.25	0.24	96	80-120	
1,1,1,2-Tetrachloroethane	0.25	0.30	120	80-120	
Total Xylenes	0.75	0.68	91	80-120	
Styrene	0.25	0.22	88	80-120	

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## Laboratory Control Sample

Date Analyzed: 7/21/2021

	Spiked Conc. (mg/kg)	LCS Response (mg/kg)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Bromoform	0.25	0.29	116	80-120	
Isopropylbenzene	0.25	0.25	100	80-120	
1,1,2,2-Tetrachloroethane	0.25	0.29	116	80-120	
Bromobenzene	0.25	0.30	120	80-120	
n-Propylbenzene	0.25	0.25	100	80-120	
1,2,3-Trichloropropane	0.25	0.28	112	80-120	
2-Chlorotoluene	0.25	0.24	96	80-120	
1,3,5-Trimethylbenzene	0.25	0.22	88	80-120	
4-Chlorotoluene	0.25	0.24	96	80-120	
tert-Butylbenzene	0.25	0.21	84	80-120	
1,2,4-Trimethylbenzene	0.25	0.22	88	80-120	
sec-Butylbenzene	0.25	0.25	100	80-120	
Isopropyltoluene	0.25	0.21	84	80-120	
1,3-Dichlorobenzene	0.25	0.28	112	80-120	
1,4-Dichlorobenzene	0.25	0.29	116	80-120	
n-Butylbenzene	0.25	0.24	96	80-120	
1,2-Dichlorobenzene	0.25	0.29	116	80-120	
1,2-Dibromo-3-Chloropropane	0.25	0.28	112	80-120	
1,2,4-Trichlorobenzene	0.25	0.27	108	80-120	
Hexachloro-1,3-butadiene	0.25	0.30	120	80-120	
Naphthalene	0.25	0.23	92	80-120	
1,2,3-Trichlorobenzene	0.25	0.29	116	80-120	

### Surrogate Recovery

Dibromofluoromethane	89	65-135
1,2-Dichloroethane-d4	96	65-135
Toluene-d8	114	65-135
4-Bromofluorobenzene	107	65-135

ANALYSES PERFORMED BY: Paul Burke

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## Volatile Organic Compounds by EPA Method 8260D in Water

Sample Description	Method Blank	GW-AS9-Overnight	GW-AS9-Overnight Dup	GW-AS4-Initial	GW-Dup3-0721	GW-98A5-Initial
Date Sampled	Reporting N/A	7/22/2021	7/22/2021	7/22/2021	7/22/2021	7/22/2021
Date Analyzed	Limits (µg/L)	7/22/2021	7/22/2021	7/22/2021	7/22/2021	7/22/2021
Dichlorodifluoromethane	2.0	nd	<200	<200	<100	<200
Chloromethane	2.0	nd	<200	<200	<100	<200
Vinyl chloride	0.2	nd	170	200	990	1000
Bromomethane	2.0	nd	<200	<200	<100	<200
Chloroethane	2.0	nd	370	420	18000 E	28000 E
Trichlorofluoromethane	2.0	nd	<200	<200	<100	<200
1,1-Dichloroethene	0.5	nd	3000	4600	9700	9800
Methylene chloride	1.0	nd	<100	<100	<50	<50
Methyl <i>tert</i> - Butyl Ether (MTBE)	5.0	nd	<500	<500	<250	<250
<i>trans</i> -1,2-Dichloroethene	1.0	nd	<100	<100	<50	<100
1,1-Dichloroethane	1.0	nd	4100	4800	35000 E	36000 E
2,2-Dichloropropane	2.0	nd	<200	<200	<100	<200
<i>cis</i> -1,2-Dichloroethene	1.0	nd	<100	<100	140	130
Chloroform	1.0	nd	<100	<100	<50	<50
1,1,1-Trichloroethane (TCA)	1.0	nd	5900	8900	12000 E	12000 E
Carbon tetrachloride	1.0	nd	<100	<100	<50	<50
1,1-Dichloropropene	1.0	nd	<100	<100	<50	<50
Benzene	1.0	nd	<100	<100	<50	<50
1,2-Dichloroethane (EDC)	1.0	nd	<100	<100	140	140
Trichloroethene (TCE)	0.4	nd	<40	<40	340	340
1,2-Dichloropropane	1.0	nd	<100	<100	<50	<50
Dibromomethane	1.0	nd	<100	<100	<50	<50
Bromodichloromethane	1.0	nd	<100	<100	<50	<50
<i>cis</i> -1,3-Dichloropropene	1.0	nd	<100	<100	<50	<50
Toluene	1.0	nd	<100	<100	<50	<50
Trans-1,3-Dichloropropene	1.0	nd	<100	<100	<50	<50
1,1,2-Trichloroethane	1.0	nd	<100	<100	63	110
Tetrachloroethene (PCE)	1.0	nd	<100	<100	59	95
1,3-Dichloropropane	1.0	nd	<100	<100	<50	<50
Dibromochloromethane	1.0	nd	<100	<100	<50	<50
1,2-Dibromoethane (EDB) *	0.01	nd	<1.0	<1.0	<0.5	<0.5
Chlorobenzene	1.0	nd	<100	<100	<50	<50
Ethylbenzene	1.0	nd	<100	<100	<50	<50
1,1,1,2-Tetrachloroethane	1.0	nd	<100	<100	<50	<50
Total Xylenes	2.0	nd	<200	<200	<100	<100
Styrene	1.0	nd	<100	<100	<50	<50

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## Volatile Organic Compounds by EPA Method 8260D in Water

Sample Description	Method	GW-AS9-Blank	GW-AS9-Overnight	GW-AS4-Initial	GW-Dup3-0721	GW-98A5-Initial
Date Sampled	Reporting	N/A	7/22/2021	7/22/2021	7/22/2021	7/22/2021
Date Analyzed	Limits	7/22/2021	7/22/2021	7/22/2021	7/22/2021	7/22/2021
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Bromoform	1.0	nd	<100	<100	<50	<50
Isopropylbenzene	4.0	nd	<400	<400	<200	<200
1,1,2,2-Tetrachloroethane	1.0	nd	<100	<100	<50	<50
Bromobenzene	1.0	nd	<100	<100	<50	<50
n-Propylbenzene	1.0	nd	<100	<100	<50	<50
1,2,3-Trichloropropane	1.0	nd	<100	<100	<50	<50
2-Chlorotoluene	1.0	nd	<100	<100	<50	<50
1,3,5-Trimethylbenzene	1.0	nd	<100	<100	<50	<50
4-Chlorotoluene	1.0	nd	<100	<100	<50	<50
tert-Butylbenzene	1.0	nd	<100	<100	<50	<50
1,2,4-Trimethylbenzene	1.0	nd	<100	<100	<50	<50
sec-Butylbenzene	1.0	nd	<100	<100	<50	<50
p-Isopropyltoluene	1.0	nd	<100	<100	<50	<50
1,3-Dichlorobenzene	1.0	nd	<100	<100	<50	<50
1,4-Dichlorobenzene	1.0	nd	<100	<100	<50	<50
n-Butylbenzene	1.0	nd	<100	<100	<50	<50
1,2-Dichlorobenzene	1.0	nd	<100	<100	<50	<50
1,2-Dibromo-3-Chloropropane	1.0	nd	<100	<100	<50	<50
1,2,4-Trichlorobenzene	2.0	nd	<200	<200	<100	<100
Hexachloro-1,3-butadiene	5.0	nd	<500	<500	<250	<250
Naphthalene	5.0	nd	<500	<500	<250	<250
1,2,3-Trichlorobenzene	5.0	nd	<500	<500	<250	<250
<hr/>						
Surrogate Recovery						
Dibromofluoromethane	89	93	94	95	97	97
1,2-Dichloroethane-d4	103	96	102	99	103	100
Toluene-d8	82	117	95	108	119	95
4-Bromofluorobenzene	78	67	83	87	82	70

"E" Reported result is an estimate because it exceeds the calibration range.

"nd" Indicates not detected at listed detection limit.

"int" Indicates that interference prevents determination

\* ANALYZED BY SIM

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

# Libby Environmental, Inc.

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## Volatile Organic Compounds by EPA Method 8260D in Water

Sample Description		GW-98A4- Initial	GW-98A3- Initial	GW-98A2- Initial	GW-98A6- Initial
Date Sampled	Reporting Limits	7/22/2021	7/22/2021	7/22/2021	7/22/2021
Date Analyzed	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Dichlorodifluoromethane	2.0	<40	<40	<40	<40
Chloromethane	2.0	<40	<40	<40	<40
Vinyl chloride	0.2	11	18	190	51
Bromomethane	2.0	<40	<40	<40	<40
Chloroethane	2.0	<40	<40	22	<40
Trichlorofluoromethane	2.0	<40	<40	<40	64
1,1-Dichloroethene	0.5	490	330	670	610
Methylene chloride	1.0	<20	<20	<20	<20
Methyl <i>tert</i> - Butyl Ether (MTBE)	5.0	<100	<100	<100	<100
<i>trans</i> -1,2-Dichloroethene	1.0	<20	<20	<20	<20
1,1-Dichloroethane	1.0	200	115	300	130
2,2-Dichloropropane	2.0	<40	<40	<40	<40
<i>cis</i> -1,2-Dichloroethene	1.0	180	<20	170	280
Chloroform	1.0	<20	<20	<20	<20
1,1,1-Trichloroethane (TCA)	1.0	190	170	130	460
Carbon tetrachloride	1.0	<20	<20	<20	<20
1,1-Dichloropropene	1.0	<20	<20	<20	<20
Benzene	1.0	<20	<20	<20	<20
1,2-Dichloroethane (EDC)	1.0	<20	<20	<20	<20
Trichloroethene (TCE)	0.4	66	64	110	280
1,2-Dichloropropane	1.0	<20	<20	<20	<20
Dibromomethane	1.0	<20	<20	<20	<20
Bromodichloromethane	1.0	<20	<20	<20	<20
<i>cis</i> -1,3-Dichloropropene	1.0	<20	<20	<20	<20
Toluene	1.0	<20	<20	<20	<20
Trans-1,3-Dichloropropene	1.0	<20	<20	<20	<20
1,1,2-Trichloroethane	1.0	<20	<20	<20	<20
Tetrachloroethene (PCE)	1.0	150	35	56	68
1,3-Dichloropropane	1.0	<20	<20	<20	<20
Dibromochloromethane	1.0	<20	<20	<20	<20
1,2-Dibromoethane (EDB) *	0.01	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	1.0	<20	<20	<20	<20
Ethylbenzene	1.0	<20	<20	<20	<20
1,1,1,2-Tetrachloroethane	1.0	<20	<20	<20	<20
Total Xylenes	2.0	<40	<40	<40	<40
Styrene	1.0	<20	<20	<20	<20

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## Volatile Organic Compounds by EPA Method 8260D in Water

Sample Description		GW-98A4- Initial	GW-98A3- Initial	GW-98A2- Initial	GW-98A6- Initial
Date Sampled	Reporting	7/22/2021	7/22/2021	7/22/2021	7/22/2021
Date Analyzed	Limits (µg/L)	7/22/2021	7/22/2021	7/22/2021	7/22/2021
Bromoform	1.0	<20	<20	<20	<20
Isopropylbenzene	4.0	<80	<80	<80	<80
1,1,2,2-Tetrachloroethane	1.0	<20	<20	<20	<20
Bromobenzene	1.0	<20	<20	<20	<20
n-Propylbenzene	1.0	<20	<20	<20	<20
1,2,3-Trichloropropane	1.0	<20	<20	<20	<20
2-Chlorotoluene	1.0	<20	<20	<20	<20
1,3,5-Trimethylbenzene	1.0	<20	<20	<20	<20
4-Chlorotoluene	1.0	<20	<20	<20	<20
tert-Butylbenzene	1.0	<20	<20	<20	<20
1,2,4-Trimethylbenzene	1.0	<20	<20	<20	<20
sec-Butylbenzene	1.0	<20	<20	<20	<20
p-Isopropyltoluene	1.0	<20	<20	<20	<20
1,3-Dichlorobenzene	1.0	<20	<20	<20	<20
1,4-Dichlorobenzene	1.0	<20	<20	<20	<20
n-Butylbenzene	1.0	<20	<20	<20	<20
1,2-Dichlorobenzene	1.0	<20	<20	<20	<20
1,2-Dibromo-3-Chloropropane	1.0	<20	<20	<20	<20
1,2,4-Trichlorobenzene	2.0	<40	<40	<40	<40
Hexachloro-1,3-butadiene	5.0	<100	<100	<100	<100
Naphthalene	5.0	<100	<100	<100	<100
1,2,3-Trichlorobenzene	5.0	<100	<100	<100	<100
Surrogate Recovery					
Dibromofluoromethane		105	97	82	90
1,2-Dichloroethane-d4		122	103	109	102
Toluene-d8		71	96	94	67
4-Bromofluorobenzene		81	73	75	94

"E" Reported result is an estimate because it exceeds the calibration range.

"nd" Indicates not detected at listed detection limit.

"int" Indicates that interference prevents determination

\* ANALYZED BY SIM

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

# Libby Environmental, Inc.

ATI Acid Sump Investigation PROJECT  
 GSI Water Solutions  
 Albany, Oregon  
 Libby Project # L210722-40  
 Client Project # 168.031.002

3322 South Bay Road NE  
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 Phone: (360) 352-2110  
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## Volatile Organic Compounds by EPA Method 8260D in Soi

Sample Description	Method	AS6-16.1- Blank	AS6-16.7- 16.7	AS6-16.7- 17.3	AS6-16.7- 17.3 Dup	AS6-17.3- 17.8
Date Sampled	Reporting	N/A	7/20/2020	7/20/2020	7/22/2021	7/20/2020
Date Analyzed	Limits (mg/kg)	7/22/2021	7/22/2021	7/22/2021	7/22/2021	7/22/2021
Dichlorodifluoromethane	0.06	nd	<1.2	<1.2	<1.2	<1.2
Chloromethane	0.06	nd	<1.2	<1.2	<1.2	<1.2
Vinyl chloride	0.02	nd	<0.4	<0.4	<0.4	<0.4
Bromomethane	0.09	nd	<1.8	<1.8	<1.8	<1.8
Chloroethane	0.06	nd	<1.2	<1.2	<1.2	<1.2
Trichlorofluoromethane	0.05	nd	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	0.05	nd	1.0	0.46	<1.0	<1.0
Methylene chloride	0.02	nd	<0.4	<0.4	<0.4	<0.4
Methyl <i>tert</i> - Butyl Ether (MTBE)	0.05	nd	<1.0	<1.0	<1.0	<1.0
<i>trans</i> -1,2-Dichloroethene	0.03	nd	<0.6	<0.6	<0.6	<0.6
1,1-Dichloroethane	0.03	nd	1.8	71	52	31
2,2-Dichloropropane	0.05	nd	<1.0	<1.0	<1.0	<1.0
<i>cis</i> -1,2-Dichloroethene	0.03	nd	<0.6	<0.6	<0.6	<0.6
Chloroform	0.03	nd	<0.6	<0.6	<0.6	<0.6
1,1,1-Trichloroethane (TCA)	0.03	nd	9.5	215 E	220 E	7.5
Carbon tetrachloride	0.03	nd	<0.6	<0.6	<0.6	<0.6
1,1-Dichloropropene	0.03	nd	<0.6	<0.6	<0.6	<0.6
Benzene	0.02	nd	<0.4	<0.4	<0.4	<0.4
1,2-Dichloroethane (EDC)	0.03	nd	<0.6	<0.6	<0.6	<0.6
Trichloroethene (TCE)	0.02	nd	0.47	0.70	0.67	<0.4
1,2-Dichloropropane	0.03	nd	<0.6	<0.6	<0.6	<0.6
Dibromomethane	0.04	nd	<0.8	<0.8	<0.8	<0.8
Bromodichloromethane	0.03	nd	<0.6	<0.6	<0.6	<0.6
<i>cis</i> -1,3-Dichloropropene	0.03	nd	<0.6	<0.6	<0.6	<0.6
Toluene	0.10	nd	<2.0	<2.0	<2.0	<2.0
Trans-1,3-Dichloropropene	0.03	nd	<0.6	<0.6	<0.6	<0.6
1,1,2-Trichloroethane	0.03	nd	<0.6	0.46	<0.6	<0.6
Tetrachloroethene (PCE)	0.03	nd	<0.6	0.76	0.57	<0.6
1,3-Dichloropropane	0.05	nd	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane	0.03	nd	<0.6	<0.6	<0.6	<0.6
1,2-Dibromoethane (EDB) *	0.005	nd	<0.1	<0.1	<0.1	<0.1
Chlorobenzene	0.03	nd	<0.6	<0.6	<0.6	<0.6
Ethylbenzene	0.05	nd	<1.0	<1.0	<1.0	<1.0
1,1,1,2-Tetrachloroethane	0.05	nd	<1.0	<1.0	<1.0	<1.0
Total Xylenes	0.15	nd	<3.0	<3.0	<3.0	<3.0
Styrene	0.03	nd	<0.6	<0.6	<0.6	<0.6

# Libby Environmental, Inc.

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GSI Water Solutions  
Albany, Oregon  
Libby Project # L210722-40  
Client Project # 168.031.002

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## Volatile Organic Compounds by EPA Method 8260D in Soi

Sample Description	Method	AS6-16.1- Blank	AS6-16.7- 16.7	AS6-16.7- 17.3 Dup	AS6-17.3- 17.8
Date Sampled	Reporting	N/A	7/20/2020	7/20/2020	7/22/2021
Date Analyzed	Limits (mg/kg)	7/22/2021	7/22/2021	7/22/2021	7/22/2021
Bromoform	0.15	nd	<3.0	<3.0	<3.0
Isopropylbenzene	0.05	nd	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	0.15	nd	<3.0	<3.0	<3.0
Bromobenzene	0.04	nd	<0.8	<0.8	<0.8
n-Propylbenzene	0.04	nd	<0.8	<0.8	<0.8
1,2,3-Trichloropropane	0.04	nd	<0.8	<0.8	<0.8
2-Chlorotoluene	0.04	nd	<0.8	<0.8	<0.8
1,3,5-Trimethylbenzene	0.04	nd	<0.8	<0.8	<0.8
4-Chlorotoluene	0.04	nd	<0.8	<0.8	<0.8
tert-Butylbenzene	0.04	nd	<0.8	<0.8	<0.8
1,2,4-Trimethylbenzene	0.04	nd	<0.8	<0.8	<0.8
sec-Butylbenzene	0.04	nd	<0.8	<0.8	<0.8
p-Isopropyltoluene	0.04	nd	<0.8	<0.8	<0.8
1,3-Dichlorobenzene	0.04	nd	<0.8	<0.8	<0.8
1,4-Dichlorobenzene	0.04	nd	<0.8	<0.8	<0.8
n-Butylbenzene	0.04	nd	<0.8	<0.8	<0.8
1,2-Dichlorobenzene	0.04	nd	<0.8	<0.8	<0.8
1,2-Dibromo-3-Chloropropane	0.15	nd	<3.0	<3.0	<3.0
1,2,4-Trichlorobenzene	0.15	nd	<3.0	<3.0	<3.0
Hexachloro-1,3-butadiene	0.15	nd	<3.0	<3.0	<3.0
Naphthalene	0.15	nd	<3.0	<3.0	<3.0
1,2,3-Trichlorobenzene	0.15	nd	<3.0	<3.0	<3.0
Surrogate Recovery					
Dibromofluoromethane		89	95	96	128
1,2-Dichloroethane-d4		103	106	106	129
Toluene-d8		82	116	103	72
4-Bromofluorobenzene		78	68	84	73

"nd" Indicates not detected at listed detection limit.

"int" Indicates that interference prevents determination

\* ANALYZED BY SIM

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

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## QA/QC for Volatile Organic Compounds by EPA Method 8260D in Water

Matrix Spike Sample Identification: GW-AS9-OVERNIGHT								
	Date Analyzed: 7/22/2021							
	Spiked Conc. ( $\mu\text{g/L}$ )	MS Response ( $\mu\text{g/L}$ )	MSD Response ( $\mu\text{g/L}$ )	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Dichlorodifluoromethane	5.0	4.7	4.9	94	98	4.2	65-135	
Chloromethane	5.0	4.6	4.9	92	98	6.3	65-135	
Vinyl chloride	5.0	5.2	5.5	104	110	5.6	65-135	
Bromomethane	5.0	4.7	4.8	94	96	2.1	65-135	
Chloroethane	5.0	4.2	6.3	84	126	40.0	65-135	R
Trichlorofluoromethane	5.0	4.6	4.8	92	96	4.3	65-135	
1,1-Dichloroethene	5.0	8.4	8.7	168	174	3.5	65-135	S
Methylene chloride	5.0	5.1	5.3	102	106	3.8	65-135	
Methyl <i>tert</i> -Butyl Ether (MTBE)	5.0	4.2	4.7	84	94	11.2	65-135	
<i>trans</i> -1,2-Dichloroethene	5.0	4.9	5.2	98	104	5.9	65-135	
1,1-Dichloroethane	5.0	8.2	10.6	164	212	25.5	65-135	S
2,2-Dichloropropane	5.0	5.3	5.5	106	110	3.7	65-135	
<i>cis</i> -1,2-Dichloroethene	5.0	4.6	5.0	92	100	8.3	65-135	
Chloroform	5.0	5.0	5.2	100	104	3.9	65-135	
1,1,1-Trichloroethane (TCA)	5.0	10.5	9.1	210	182	14.3	65-135	S
Carbon tetrachloride	5.0	5.1	5.4	102	108	5.7	65-135	
1,1-Dichloropropene	5.0	4.3	4.6	86	92	6.7	65-135	
Benzene	5.0	4.7	4.9	94	98	4.2	65-135	
1,2-Dichloroethane (EDC)	5.0	5.3	5.5	106	110	3.7	65-135	
Trichloroethene (TCE)	5.0	6.0	6.4	120	128	6.5	65-135	
1,2-Dichloropropane	5.0	5.5	5.9	110	118	7.0	65-135	
Dibromomethane	5.0	6.0	6.3	120	126	4.9	65-135	
Bromodichloromethane	5.0	5.7	5.8	114	116	1.7	65-135	
<i>cis</i> -1,3-Dichloropropene	5.0	5.6	5.6	112	112	0.0	65-135	
Toluene	5.0	5.1	5.2	102	104	1.9	65-135	
Trans-1,3-Dichloropropene	5.0	7.9	7.4	158	148	6.5	65-135	S
1,1,2-Trichloroethane	5.0	9.7	9.6	194	192	1.0	65-135	S
Tetrachloroethene (PCE)	5.0	10.3	10.0	206	200	3.0	65-135	S
1,3-Dichloropropane	5.0	8.6	8.3	172	166	3.6	65-135	S
Dibromochloromethane	5.0	10.8	10.0	216	200	7.7	65-135	S
1,2-Dibromoethane (EDB)	5.0	9.6	9.4	192	188	2.1	65-135	S
Chlorobenzene	5.0	5.7	5.5	114	110	3.6	65-135	
Ethylbenzene	5.0	4.3	4.3	86	86	0.0	65-135	
1,1,1,2-Tetrachloroethane	5.0	8.5	8.0	170	160	6.1	65-135	S
Total Xylenes	15.0	10.8	10.1	72	67	6.7	65-135	
Styrene	5.0	3.2	2.8	64	56	13.3	65-135	S

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## QA/QC for Volatile Organic Compounds by EPA Method 8260D in Water

Matrix Spike Sample Identification: GW-AS7-Overnight								
	Date Analyzed: 7/22/2021							
	Spiked Conc. ( $\mu\text{g/L}$ )	MS Response ( $\mu\text{g/L}$ )	MSD Response ( $\mu\text{g/L}$ )	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Bromoform	5.0	7.4	6.7	148	134	9.9	65-135	S
Isopropylbenzene	5.0	3.3	3.1	66	62	6.2	65-135	S
1,1,2,2-Tetrachloroethane	5.0	6.3	6.8	126	136	7.6	65-135	S
Bromobenzene	5.0	4.4	4.4	88	88	0.0	65-135	
n-Propylbenzene	5.0	3.7	4.0	74	80	7.8	65-135	
1,2,3-Trichloropropane	5.0	6.1	6.6	122	132	7.9	65-135	
2-Chlorotoluene	5.0	3.6	3.8	72	76	5.4	65-135	
1,3,5-Trimethylbenzene	5.0	3.3	3.5	66	70	5.9	65-135	
4-Chlorotoluene	5.0	3.6	3.8	72	76	5.4	65-135	
tert-Butylbenzene	5.0	3.1	3.1	62	62	0.0	65-135	S
1,2,4-Trimethylbenzene	5.0	3.3	3.5	66	70	5.9	65-135	
sec-Butylbenzene	5.0	3.6	3.7	72	74	2.7	65-135	
Isopropyltoluene	5.0	3.3	3.3	66	66	0.0	65-135	
1,3-Dichlorobenzene	5.0	5.1	5.4	102	108	5.7	65-135	
1,4-Dichlorobenzene	5.0	5.5	5.9	110	118	7.0	65-135	
n-Butylbenzene	5.0	4.3	4.0	86	80	7.2	65-135	
1,2-Dichlorobenzene	5.0	5.0	5.1	100	102	2.0	65-135	
1,2-Dibromo-3-Chloropropane	5.0	6.4	5.9	128	118	8.1	65-135	
1,2,4-Trichlorobenzene	5.0	5.0	5.1	100	102	2.0	65-135	
Hexachloro-1,3-butadiene	5.0	6.9	6.9	138	138	0.0	65-135	S
Naphthalene	5.0	3.7	3.6	74	72	2.7	65-135	
1,2,3-Trichlorobenzene	5.0	5.9	6.1	118	122	3.3	65-135	
Surrogate Recovery (%)				MS	MSD			
Dibromofluoromethane				99	96		65-135	
1,2-Dichloroethane-d4				104	101		65-135	
Toluene-d8				119	115		65-135	
4-Bromofluorobenzene				94	78		65-135	

"S" Spike recovery outside acceptable recovery limits.

"R" High relative percent difference observed.

ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Paul Burke

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## Laboratory Control Sample

Date Analyzed: 7/22/2021					
	Spiked Conc. ( $\mu\text{g/L}$ )	LCS Response ( $\mu\text{g/L}$ )	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Dichlorodifluoromethane	5.0	4.0	80	80-120	
Chloromethane	5.0	4.4	88	80-120	
Vinyl chloride	5.0	4.5	90	80-120	
Bromomethane	5.0	4.1	82	80-120	
Chloroethane	5.0	4.8	96	80-120	
Trichlorofluoromethane	5.0	4.1	82	80-120	
1,1-Dichloroethene	5.0	4.6	92	80-120	
Methylene chloride	5.0	4.8	96	80-120	
Methyl <i>tert</i> -Butyl Ether (MTBE)	5.0	5.2	104	80-120	
<i>trans</i> -1,2-Dichloroethene	5.0	4.9	98	80-120	
1,1-Dichloroethane	5.0	5.5	110	80-120	
2,2-Dichloropropane	5.0	5.0	100	80-120	
<i>cis</i> -1,2-Dichloroethene	5.0	4.9	98	80-120	
Chloroform	5.0	4.5	90	80-120	
1,1,1-Trichloroethane (TCA)	5.0	4.6	92	80-120	
Carbon tetrachloride	5.0	4.7	94	80-120	
1,1-Dichloropropene	5.0	4.9	98	80-120	
Benzene	5.0	4.9	98	80-120	
1,2-Dichloroethane (EDC)	5.0	5.0	100	80-120	
Trichloroethene (TCE)	5.0	5.5	110	80-120	
1,2-Dichloropropane	5.0	5.8	116	80-120	
Dibromomethane	5.0	5.9	118	80-120	
Bromodichloromethane	5.0	5.4	108	80-120	
<i>cis</i> -1,3-Dichloropropene	5.0	5.9	118	80-120	
Toluene	5.0	5.2	104	80-120	
Trans-1,3-Dichloropropene	5.0	5.7	114	80-120	
1,1,2-Trichloroethane	5.0	5.7	114	80-120	
Tetrachloroethene (PCE)	5.0	5.6	112	80-120	
1,3-Dichloropropene	5.0	6.0	120	80-120	
Dibromochloromethane	5.0	5.8	116	80-120	
1,2-Dibromoethane (EDB)	5.0	6.0	120	80-120	
Chlorobenzene	5.0	5.4	108	80-120	
Ethylbenzene	5.0	4.2	84	80-120	
1,1,1,2-Tetrachloroethane	5.0	6.0	120	80-120	
Total Xylenes	15.0	12.7	85	80-120	
Styrene	5.0	4.4	88	80-120	

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## Laboratory Control Sample

Date Analyzed: GW-AS7-Overnight					
	Spiked Conc. ( $\mu\text{g/L}$ )	LCS Response ( $\mu\text{g/L}$ )	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Bromoform	5.0	5.9	118	80-120	
Isopropylbenzene	5.0	4.4	88	80-120	
1,1,2,2-Tetrachloroethane	5.0	5.7	114	80-120	
Bromobenzene	5.0	4.9	98	80-120	
n-Propylbenzene	5.0	4.1	82	80-120	
1,2,3-Trichloropropane	5.0	5.0	100	80-120	
2-Chlorotoluene	5.0	4.0	80	80-120	
1,3,5-Trimethylbenzene	5.0	4.9	98	80-120	
4-Chlorotoluene	5.0	4.3	86	80-120	
tert-Butylbenzene	5.0	4.2	84	80-120	
1,2,4-Trimethylbenzene	5.0	4.0	80	80-120	
sec-Butylbenzene	5.0	4.0	80	80-120	
Isopropyltoluene	5.0	4.1	82	80-120	
1,3-Dichlorobenzene	5.0	5.4	108	80-120	
1,4-Dichlorobenzene	5.0	5.7	114	80-120	
n-Butylbenzene	5.0	4.4	88	80-120	
1,2-Dichlorobenzene	5.0	5.1	102	80-120	
1,2-Dibromo-3-Chloropropane	5.0	5.7	114	80-120	
1,2,4-Trichlorobenzene	5.0	5.6	112	80-120	
Hexachloro-1,3-butadiene	5.0	5.8	116	80-120	
Naphthalene	5.0	4.6	92	80-120	
1,2,3-Trichlorobenzene	5.0	5.4	108	80-120	
Surrogate Recovery					
Dibromofluoromethane			89	65-135	
1,2-Dichloroethane-d4			102	65-135	
Toluene-d8			116	65-135	
4-Bromofluorobenzene			86	65-135	

ANALYSES PERFORMED BY: Paul Burke

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## QA/QC for Volatile Organic Compounds by EPA Method 8260D in Soil

Matrix Spike Sample Identification: AS6-16.7-17.3								
	Date Analyzed: 7/22/2021							
	Spiked Conc. (mg/kg)	MS Response (mg/kg)	MSD Response (mg/kg)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Dichlorodifluoromethane	0.25	0.25	0.22	100	88	12.8	65-135	
Chloromethane	0.25	0.24	0.22	96	88	8.7	65-135	
Vinyl chloride	0.25	0.25	0.25	100	100	0.0	65-135	
Bromomethane	0.25	0.26	0.24	104	96	8.0	65-135	
Chloroethane	0.25	0.25	0.22	100	88	12.8	65-135	
Trichlorofluoromethane	0.25	0.25	0.20	100	80	22.2	65-135	
1,1-Dichloroethene	0.25	0.27	0.27	108	108	0.0	65-135	
Methylene chloride	0.25	0.29	0.26	116	104	10.9	65-135	
Methyl <i>tert</i> -Butyl Ether (MTBE)	0.25	0.27	0.26	108	104	3.8	65-135	
<i>trans</i> -1,2-Dichloroethene	0.25	0.27	0.26	108	104	3.8	65-135	
1,1-Dichloroethane	0.25	0.62	0.00	248	0	200.0	65-135	S,R
2,2-Dichloropropane	0.25	0.30	0.26	120	104	14.3	65-135	
<i>cis</i> -1,2-Dichloroethene	0.25	0.28	0.27	112	108	3.6	65-135	
Chloroform	0.25	0.28	0.26	112	104	7.4	65-135	
1,1,1-Trichloroethane (TCA)	0.25	0.11	0.00	44	0	200.0	65-135	S,R
Carbon tetrachloride	0.25	0.26	0.27	104	108	3.8	65-135	
1,1-Dichloropropene	0.25	0.27	0.24	108	96	11.8	65-135	
Benzene	0.25	0.29	0.25	116	100	14.8	65-135	
1,2-Dichloroethane (EDC)	0.25	0.29	0.28	116	112	3.5	65-135	
Trichloroethene (TCE)	0.25	0.23	0.32	92	128	32.7	65-135	
1,2-Dichloropropane	0.25	0.28	0.33	112	132	16.4	65-135	
Dibromomethane	0.25	0.34	0.30	136	120	12.5	65-135	S
Bromodichloromethane	0.25	0.29	0.29	116	116	0.0	65-135	
<i>cis</i> -1,3-Dichloropropene	0.25	0.14	0.13	56	52	7.4	65-135	S
Toluene	0.25	0.19	0.18	76	72	5.4	65-135	
Trans-1,3-Dichloropropene	0.25	0.24	0.25	96	100	4.1	65-135	
1,1,2-Trichloroethane	0.25	0.47	0.50	188	200	6.2	65-135	S
Tetrachloroethene (PCE)	0.25	0.29	0.31	116	124	6.7	65-135	
1,3-Dichloropropane	0.25	0.32	0.35	128	140	9.0	65-135	S
Dibromochloromethane	0.25	0.43	0.44	172	176	2.3	65-135	S
1,2-Dibromoethane (EDB)	0.25	0.40	0.41	160	164	2.5	65-135	S
Chlorobenzene	0.25	0.30	0.32	120	128	6.5	65-135	
Ethylbenzene	0.25	0.24	0.26	96	104	8.0	65-135	
1,1,1,2-Tetrachloroethane	0.25	0.45	0.48	180	192	6.5	65-135	S
Total Xylenes	0.75	0.65	0.70	87	93	7.4	65-135	
Styrene	0.25	0.19	0.20	76	80	5.1	65-135	

# Libby Environmental, Inc.

ATI Acid Sump Investigation PROJECT  
 GSI Water Solutions  
 Albany, Oregon  
 Libby Project # L210722-40  
 Client Project # 168.031.002

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## QA/QC for Volatile Organic Compounds by EPA Method 8260D in Soil

Matrix Spike Sample Identification: AS6-16.7-17.3								
	Date Analyzed: 7/22/2021							
	Spiked Conc. (mg/kg)	MS Response (mg/kg)	MSD Response (mg/kg)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Bromoform	0.25	0.52	0.53	208	212	1.9	65-135	S
Isopropylbenzene	0.25	0.19	0.20	76	80	5.1	65-135	
1,1,2,2-Tetrachloroethane	0.25	0.46	0.46	184	184	0.0	65-135	S
Bromobenzene	0.25	0.24	0.26	96	104	8.0	65-135	
n-Propylbenzene	0.25	0.22	0.23	88	92	4.4	65-135	
1,2,3-Trichloropropane	0.25	0.49	0.48	196	192	2.1	65-135	S
2-Chlorotoluene	0.25	0.20	0.20	80	80	0.0	65-135	
1,3,5-Trimethylbenzene	0.25	0.19	0.20	76	80	5.1	65-135	
4-Chlorotoluene	0.25	0.19	0.21	76	84	10.0	65-135	
tert-Butylbenzene	0.25	0.16	0.17	64	68	6.1	65-135	S
1,2,4-Trimethylbenzene	0.25	0.18	0.19	72	76	5.4	65-135	
sec-Butylbenzene	0.25	0.20	0.21	80	84	4.9	65-135	
Isopropyltoluene	0.25	0.17	0.17	68	68	0.0	65-135	
1,3-Dichlorobenzene	0.25	0.27	0.29	108	116	7.1	65-135	
1,4-Dichlorobenzene	0.25	0.29	0.30	116	120	3.4	65-135	
n-Butylbenzene	0.25	0.18	0.19	72	76	5.4	65-135	
1,2-Dichlorobenzene	0.25	0.32	0.33	128	132	3.1	65-135	
1,2-Dibromo-3-Chloropropane	0.25	0.48	0.49	192	196	2.1	65-135	S
1,2,4-Trichlorobenzene	0.25	0.25	0.26	100	104	3.9	65-135	
Hexachloro-1,3-butadiene	0.25	0.35	0.36	140	144	2.8	65-135	S
Naphthalene	0.25	0.23	0.24	92	96	4.3	65-135	
1,2,3-Trichlorobenzene	0.25	0.33	0.35	132	140	5.9	65-135	S
Surrogate Recovery (%)				MS	MSD			
Dibromofluoromethane				103	96		65-135	
1,2-Dichloroethane-d4				116	104		65-135	
Toluene-d8				67	67		65-135	
4-Bromofluorobenzene				104	103		65-135	

"S" Spike recovery outside acceptable recovery limits.

"R" High relative percent difference observed.

ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Paul Burke

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## Laboratory Control Sample

	Date Analyzed: 7/22/2021	Spiked Conc. (mg/kg)	LCS Response (mg/kg)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Dichlorodifluoromethane		0.25	0.20	80	80-120	
Chloromethane		0.25	0.22	88	80-120	
Vinyl chloride		0.25	0.24	96	80-120	
Bromomethane		0.25	0.21	84	80-120	
Chloroethane		0.25	0.24	96	80-120	
Trichlorofluoromethane		0.25	0.20	80	80-120	
1,1-Dichloroethene		0.25	0.23	92	80-120	
Methylene chloride		0.25	0.24	96	80-120	
Methyl <i>tert</i> -Butyl Ether (MTBE)		0.25	0.26	104	80-120	
<i>trans</i> -1,2-Dichloroethene		0.25	0.25	100	80-120	
1,1-Dichloroethane		0.25	0.27	108	80-120	
2,2-Dichloropropane		0.25	0.25	100	80-120	
<i>cis</i> -1,2-Dichloroethene		0.25	0.25	100	80-120	
Chloroform		0.25	0.22	88	80-120	
1,1,1-Trichloroethane (TCA)		0.25	0.23	92	80-120	
Carbon tetrachloride		0.25	0.24	96	80-120	
1,1-Dichloropropene		0.25	0.25	100	80-120	
Benzene		0.25	0.25	100	80-120	
1,2-Dichloroethane (EDC)		0.25	0.25	100	80-120	
Trichloroethene (TCE)		0.25	0.28	112	80-120	
1,2-Dichloropropane		0.25	0.29	116	80-120	
Dibromomethane		0.25	0.29	116	80-120	
Bromodichloromethane		0.25	0.27	108	80-120	
<i>cis</i> -1,3-Dichloropropene		0.25	0.30	120	80-120	
Toluene		0.25	0.26	104	80-120	
Trans-1,3-Dichloropropene		0.25	0.29	116	80-120	
1,1,2-Trichloroethane		0.25	0.29	116	80-120	
Tetrachloroethene (PCE)		0.25	0.28	112	80-120	
1,3-Dichloropropane		0.25	0.30	120	80-120	
Dibromochloromethane		0.25	0.29	116	80-120	
1,2-Dibromoethane (EDB)		0.25	0.30	120	80-120	
Chlorobenzene		0.25	0.27	108	80-120	
Ethylbenzene		0.25	0.21	84	80-120	
1,1,1,2-Tetrachloroethane		0.25	0.30	120	80-120	
Total Xylenes		0.75	0.73	97	80-120	
Styrene		0.25	0.22	88	80-120	

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## Laboratory Control Sample

Date Analyzed: 7/22/2021

	Spiked Conc. (mg/kg)	LCS Response (mg/kg)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Bromoform	0.25	0.30	120	80-120	
Isopropylbenzene	0.25	0.22	88	80-120	
1,1,2,2-Tetrachloroethane	0.25	0.28	112	80-120	
Bromobenzene	0.25	0.25	100	80-120	
n-Propylbenzene	0.25	0.20	80	80-120	
1,2,3-Trichloropropane	0.25	0.25	100	80-120	
2-Chlorotoluene	0.25	0.20	80	80-120	
1,3,5-Trimethylbenzene	0.25	0.25	100	80-120	
4-Chlorotoluene	0.25	0.21	84	80-120	
tert-Butylbenzene	0.25	0.21	84	80-120	
1,2,4-Trimethylbenzene	0.25	0.20	80	80-120	
sec-Butylbenzene	0.25	0.20	80	80-120	
Isopropyltoluene	0.25	0.20	80	80-120	
1,3-Dichlorobenzene	0.25	0.27	108	80-120	
1,4-Dichlorobenzene	0.25	0.29	116	80-120	
n-Butylbenzene	0.25	0.22	88	80-120	
1,2-Dichlorobenzene	0.25	0.26	104	80-120	
1,2-Dibromo-3-Chloropropane	0.25	0.29	116	80-120	
1,2,4-Trichlorobenzene	0.25	0.28	112	80-120	
Hexachloro-1,3-butadiene	0.25	0.29	116	80-120	
Naphthalene	0.25	0.23	92	80-120	
1,2,3-Trichlorobenzene	0.25	0.27	108	80-120	

### Surrogate Recovery

Dibromofluoromethane	89	65-135
1,2-Dichloroethane-d4	102	65-135
Toluene-d8	116	65-135
4-Bromofluorobenzene	86	65-135

ANALYSES PERFORMED BY: Paul Burke

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## Volatile Organic Compounds by EPA Method 8260D in Water

Sample Description	Method	GW-98A7-	GW-98A7-	GW-Dup-4-	
	Blank	Initial	Initial Dup	0721	
Date Sampled	Reporting	N/A	7/23/2021	7/23/2021	7/23/2021
Date Analyzed	Limits (µg/L)	7/23/2021 (µg/L)	7/23/2021 (µg/L)	7/23/2021 (µg/L)	7/23/2021 (µg/L)
Dichlorodifluoromethane	2.0	nd	<1.2	<40	<40
Chloromethane	2.0	nd	<1.2	<40	<40
Vinyl chloride	0.2	nd	<0.4	<4.0	<4.0
Bromomethane	2.0	nd	<1.8	<40	<40
Chloroethane	2.0	nd	<1.2	<40	<40
Trichlorofluoromethane	2.0	nd	<1.0	<40	<40
1,1-Dichloroethene	0.5	nd	70	68	87
Methylene chloride	1.0	nd	<0.4	<20	<20
Methyl <i>tert</i> - Butyl Ether (MTBE)	5.0	nd	<1.0	<100	<100
<i>trans</i> -1,2-Dichloroethene	1.0	nd	<0.6	<20	<20
1,1-Dichloroethane	1.0	nd	20	22	23
2,2-Dichloropropane	2.0	nd	<1.0	<40	<40
<i>cis</i> -1,2-Dichloroethene	1.0	nd	<0.6	<20	<20
Chloroform	1.0	nd	<0.6	<20	<20
1,1,1-Trichloroethane (TCA)	1.0	nd	7.3 J	8.8	6.0 J
Carbon tetrachloride	1.0	nd	<0.6	<20	<20
1,1-Dichloropropene	1.0	nd	<0.6	<20	<20
Benzene	1.0	nd	<0.4	<20	<20
1,2-Dichloroethane (EDC)	1.0	nd	<0.6	<20	<20
Trichloroethene (TCE)	0.4	nd	15	14	13
1,2-Dichloropropane	1.0	nd	<0.6	<20	<20
Dibromomethane	1.0	nd	<0.8	<20	<20
Bromodichloromethane	1.0	nd	<0.6	<20	<20
<i>cis</i> -1,3-Dichloropropene	1.0	nd	<0.6	<20	<20
Toluene	1.0	nd	<2.0	<20	<20
Trans-1,3-Dichloropropene	1.0	nd	<0.6	<20	<20
1,1,2-Trichloroethane	1.0	nd	<0.6	<20	<20
Tetrachloroethene (PCE)	1.0	nd	11	17	8.7
1,3-Dichloropropane	1.0	nd	<1.0	<20	<20
Dibromochloromethane	1.0	nd	<0.6	<20	<20
1,2-Dibromoethane (EDB) *	0.01	nd	<0.1	<0.2	<0.2
Chlorobenzene	1.0	nd	<0.6	<20	<20
Ethylbenzene	1.0	nd	<1.0	<20	<20
1,1,1,2-Tetrachloroethane	1.0	nd	<1.0	<20	<20
Total Xylenes	2.0	nd	<3.0	<40	<40
Styrene	1.0	nd	<0.6	<20	<20

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## Volatile Organic Compounds by EPA Method 8260D in Water

Sample Description	Method	GW-98A7- Blank	GW-98A7- Initial	GW-Dup-4- Initial Dup	GW-Dup-4- 0721
Date Sampled	Reporting	N/A	7/23/2021	7/23/2021	7/23/2021
Date Analyzed	Limits	7/23/2021	7/23/2021	7/23/2021	7/23/2021
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Bromoform	1.0	nd	<3.0	<20	<20
Isopropylbenzene	4.0	nd	<1.0	<80	<80
1,1,2,2-Tetrachloroethane	1.0	nd	<3.0	<20	<20
Bromobenzene	1.0	nd	<0.8	<20	<20
n-Propylbenzene	1.0	nd	<0.8	<20	<20
1,2,3-Trichloropropane	1.0	nd	<0.8	<20	<20
2-Chlorotoluene	1.0	nd	<0.8	<20	<20
1,3,5-Trimethylbenzene	1.0	nd	<0.8	<20	<20
4-Chlorotoluene	1.0	nd	<0.8	<20	<20
tert-Butylbenzene	1.0	nd	<0.8	<20	<20
1,2,4-Trimethylbenzene	1.0	nd	<0.8	<20	<20
sec-Butylbenzene	1.0	nd	<0.8	<20	<20
p-Isopropyltoluene	1.0	nd	<0.8	<20	<20
1,3-Dichlorobenzene	1.0	nd	<0.8	<20	<20
1,4-Dichlorobenzene	1.0	nd	<0.8	<20	<20
n-Butylbenzene	1.0	nd	<0.8	<20	<20
1,2-Dichlorobenzene	1.0	nd	<0.8	<20	<20
1,2-Dibromo-3-Chloropropane	1.0	nd	<3.0	<20	<20
1,2,4-Trichlorobenzene	2.0	nd	<3.0	<40	<40
Hexachloro-1,3-butadiene	5.0	nd	<3.0	<100	<100
Naphthalene	5.0	nd	<3.0	<100	<100
1,2,3-Trichlorobenzene	5.0	nd	<3.0	<100	<100
Surrogate Recovery					
Dibromofluoromethane		94	92	95	96
1,2-Dichloroethane-d4		107	88	96	97
Toluene-d8		114	89	91	72
4-Bromofluorobenzene		67	97	87	86

"J" Analyte was positively identified. Reported result is an estimate.

"nd" Indicates not detected at listed detection limit.

"int" Indicates that interference prevents determination

\* ANALYZED BY SIM

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

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## Volatile Organic Compounds by EPA Method 8260D in Soi

Sample Description	Method	AS5-7-7.5	AS5-13-14	AS5-14-14.5	AS5-14-14.5 Dup	98A6-7.0-8.0
	Blank					
Date Sampled	Reporting	N/A	7/20/2020	7/20/2020	7/20/2020	7/20/2020
Date Analyzed	Limits	7/23/2021	7/23/2021	7/23/2021	7/23/2021	7/23/2021
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Dichlorodifluoromethane	0.06	nd	nd	<2.4	<0.6	<0.6
Chloromethane	0.06	nd	nd	<2.4	<0.6	<0.6
Vinyl chloride	0.02	nd	nd	<0.8	<0.2	<0.2
Bromomethane	0.09	nd	nd	<3.6	<0.9	<0.9
Chloroethane	0.06	nd	nd	<2.4	<0.6	<0.6
Trichlorofluoromethane	0.05	nd	nd	<2.0	<0.5	<0.5
1,1-Dichloroethene	0.05	nd	nd	0.89	<0.5	<0.5
Methylene chloride	0.02	nd	nd	<0.8	<0.2	<0.2
Methyl <i>tert</i> - Butyl Ether (MTBE)	0.05	nd	nd	<2.0	<0.5	<0.5
<i>trans</i> -1,2-Dichloroethene	0.03	nd	nd	<1.2	<0.3	<0.3
1,1-Dichloroethane	0.03	nd	nd	1.3	0.42	0.16 J
2,2-Dichloropropane	0.05	nd	nd	<2.0	<0.5	<0.5
<i>cis</i> -1,2-Dichloroethene	0.03	nd	nd	<1.2	<0.3	<0.3
Chloroform	0.03	nd	nd	<1.2	<0.3	<0.3
1,1,1-Trichloroethane (TCA)	0.03	nd	.019 J	18	12	1.3
Carbon tetrachloride	0.03	nd	nd	<1.2	<0.3	<0.3
1,1-Dichloropropene	0.03	nd	nd	<1.2	<0.3	<0.3
Benzene	0.02	nd	nd	<0.8	<0.2	<0.2
1,2-Dichloroethane (EDC)	0.03	nd	nd	<1.2	<0.3	<0.3
Trichloroethene (TCE)	0.02	nd	nd	<0.8	<0.2	<0.2
1,2-Dichloropropane	0.03	nd	nd	<1.2	<0.3	<0.3
Dibromomethane	0.04	nd	nd	<1.6	<0.4	<0.4
Bromodichloromethane	0.03	nd	nd	<1.2	<0.3	<0.3
<i>cis</i> -1,3-Dichloropropene	0.03	nd	nd	<1.2	<0.3	<0.3
Toluene	0.10	nd	nd	<4.0	<1.0	<1.0
Trans-1,3-Dichloropropene	0.03	nd	nd	<1.2	<0.3	<0.3
1,1,2-Trichloroethane	0.03	nd	nd	<1.2	<0.3	<0.3
Tetrachloroethene (PCE)	0.03	nd	nd	<1.2	<0.3	<0.3
1,3-Dichloropropane	0.05	nd	nd	<2.0	<0.5	<0.5
Dibromochloromethane	0.03	nd	nd	<1.2	<0.3	<0.3
1,2-Dibromoethane (EDB) *	0.005	nd	nd	<0.2	<0.05	<0.05
Chlorobenzene	0.03	nd	nd	<1.2	<0.3	<0.3
Ethylbenzene	0.05	nd	nd	<2.0	<0.5	<0.5
1,1,1,2-Tetrachloroethane	0.05	nd	nd	<2.0	<0.5	<0.5
Total Xylenes	0.15	nd	nd	<6.0	<1.5	<1.5
Styrene	0.03	nd	nd	<1.2	<0.3	<0.3

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## Volatile Organic Compounds by EPA Method 8260D in Soi

Sample Description	Method	AS5-7-7.5	AS5-13-14	AS5-14-14.5	AS5-14-14.5 Dup	98A6-7.0-8.0
	Blank					
Date Sampled	Reporting	N/A	7/20/2020	7/20/2020	7/20/2020	7/20/2020
Date Analyzed	Limits	7/23/2021	7/23/2021	7/23/2021	7/23/2021	7/23/2021
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Bromoform	0.15	nd	nd	<6.0	<1.5	<1.5
Isopropylbenzene	0.05	nd	nd	<2.0	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.15	nd	nd	<6.0	<1.5	<1.5
Bromobenzene	0.04	nd	nd	<1.6	<0.4	<0.4
n-Propylbenzene	0.04	nd	nd	<1.6	<0.4	<0.4
1,2,3-Trichloropropane	0.04	nd	nd	<1.6	<0.4	<0.4
2-Chlorotoluene	0.04	nd	nd	<1.6	<0.4	<0.4
1,3,5-Trimethylbenzene	0.04	nd	nd	<1.6	<0.4	<0.4
4-Chlorotoluene	0.04	nd	nd	<1.6	<0.4	<0.4
tert-Butylbenzene	0.04	nd	nd	<1.6	<0.4	<0.4
1,2,4-Trimethylbenzene	0.04	nd	nd	<1.6	<0.4	<0.4
sec-Butylbenzene	0.04	nd	nd	<1.6	<0.4	<0.4
p-Isopropyltoluene	0.04	nd	nd	<1.6	<0.4	<0.4
1,3-Dichlorobenzene	0.04	nd	nd	<1.6	<0.4	<0.4
1,4-Dichlorobenzene	0.04	nd	nd	<1.6	<0.4	<0.4
n-Butylbenzene	0.04	nd	nd	<1.6	<0.4	<0.4
1,2-Dichlorobenzene	0.04	nd	nd	<1.6	<0.4	<0.4
1,2-Dibromo-3-Chloropropane	0.15	nd	nd	<6.0	<1.5	<1.5
1,2,4-Trichlorobenzene	0.15	nd	nd	<6.0	<1.5	<1.5
Hexachloro-1,3-butadiene	0.15	nd	nd	<6.0	<1.5	<1.5
Naphthalene	0.15	nd	nd	<6.0	<1.5	<1.5
1,2,3-Trichlorobenzene	0.15	nd	nd	<6.0	<1.5	<1.5
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Surrogate Recovery						
Dibromofluoromethane	94	99	98	115	101	94
1,2-Dichloroethane-d4	107	110	113	126	128	107
Toluene-d8	114	94	117	68	74	119
4-Bromofluorobenzene	67	83	65	102	85	116

"J" Analyte was positively identified. Reported result is an estimate.

"nd" Indicates not detected at listed detection limit.

"int" Indicates that interference prevents determination

\* ANALYZED BY SIM

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

# Libby Environmental, Inc.

ATI Acid Sump Investigation PROJECT  
 GSI Water Solutions  
 Albany, Oregon  
 Libby Project # L210723-40  
 Client Project # 168.031.002

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## QA/QC for Volatile Organic Compounds by EPA Method 8260D in Water

Matrix Spike Sample Identification: GW-98A7-Initial								
	Date Analyzed: 7/23/2021							
	Spiked Conc. ( $\mu\text{g/L}$ )	MS Response ( $\mu\text{g/L}$ )	MSD Response ( $\mu\text{g/L}$ )	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Dichlorodifluoromethane	5.0	4.5	5.3	90	106	16.3	65-135	
Chloromethane	5.0	4.3	5.2	86	104	18.9	65-135	
Vinyl chloride	5.0	4.8	6.1	96	122	23.9	65-135	
Bromomethane	5.0	5.2	5.3	104	106	1.9	65-135	
Chloroethane	5.0	4.1	5.1	82	102	21.7	65-135	
Trichlorofluoromethane	5.0	4.5	5.0	90	100	10.5	65-135	
1,1-Dichloroethene	5.0	5.3	7.2	106	144	30.4	65-135	S
Methylene chloride	5.0	5.4	6.6	108	132	20.0	65-135	
Methyl <i>tert</i> -Butyl Ether (MTBE)	5.0	5.9	6.6	118	132	11.2	65-135	
<i>trans</i> -1,2-Dichloroethene	5.0	5.2	6.3	104	126	19.1	65-135	
1,1-Dichloroethane	5.0	6.2	7.4	124	148	17.6	65-135	S
2,2-Dichloropropane	5.0	5.5	5.7	110	114	3.6	65-135	
<i>cis</i> -1,2-Dichloroethene	5.0	6.3	6.6	126	132	4.7	65-135	
Chloroform	5.0	5.3	5.8	106	116	9.0	65-135	
1,1,1-Trichloroethane (TCA)	5.0	5.3	5.3	106	106	0.0	65-135	
Carbon tetrachloride	5.0	5.0	4.9	100	98	2.0	65-135	
1,1-Dichloropropene	5.0	5.1	5.2	102	104	1.9	65-135	
Benzene	5.0	5.6	5.5	112	110	1.8	65-135	
1,2-Dichloroethane (EDC)	5.0	5.0	6.5	100	130	26.1	65-135	
Trichloroethene (TCE)	5.0	5.3	5.3	106	106	0.0	65-135	
1,2-Dichloropropane	5.0	5.7	5.0	114	100	13.1	65-135	
Dibromomethane	5.0	6.5	6.4	130	128	1.6	65-135	
Bromodichloromethane	5.0	5.9	5.9	118	118	0.0	65-135	
<i>cis</i> -1,3-Dichloropropene	5.0	3.7	3.3	74	66	11.4	65-135	
Toluene	5.0	3.4	4.0	68	80	16.2	65-135	
Trans-1,3-Dichloropropene	5.0	4.7	4.7	94	94	0.0	65-135	
1,1,2-Trichloroethane	5.0	9.1	9.2	182	184	1.1	65-135	S
Tetrachloroethene (PCE)	5.0	5.5	5.4	110	108	1.8	65-135	
1,3-Dichloropropane	5.0	6.1	6.4	122	128	4.8	65-135	
Dibromochloromethane	5.0	8.8	8.7	176	174	1.1	65-135	S
1,2-Dibromoethane (EDB)	5.0	7.7	7.6	154	152	1.3	65-135	S
Chlorobenzene	5.0	6.1	6.0	122	120	1.7	65-135	
Ethylbenzene	5.0	4.7	4.6	94	92	2.2	65-135	
1,1,1,2-Tetrachloroethane	5.0	9.3	8.9	186	178	4.4	65-135	S
Total Xylenes	15.0	12.1	11.8	81	79	2.5	65-135	
Styrene	5.0	3.7	3.6	74	72	2.7	65-135	

# Libby Environmental, Inc.

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 GSI Water Solutions  
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## QA/QC for Volatile Organic Compounds by EPA Method 8260D in Water

Matrix Spike Sample Identification: GW-98A7-Initial								
	Date Analyzed: 7/23/2021							
	Spiked Conc. ( $\mu\text{g/L}$ )	MS Response ( $\mu\text{g/L}$ )	MSD Response ( $\mu\text{g/L}$ )	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Bromoform	5.0	9.7	10.3	194	206	6.0	65-135	S
Isopropylbenzene	5.0	3.7	3.8	74	76	2.7	65-135	
1,1,2,2-Tetrachloroethane	5.0	9.1	9.5	182	190	4.3	65-135	S
Bromobenzene	5.0	4.9	5.1	98	102	4.0	65-135	
n-Propylbenzene	5.0	3.8	3.9	76	78	2.6	65-135	
1,2,3-Trichloropropane	5.0	9.7	9.5	194	190	2.1	65-135	S
2-Chlorotoluene	5.0	3.9	3.9	78	78	0.0	65-135	
1,3,5-Trimethylbenzene	5.0	3.7	3.6	74	72	2.7	65-135	
4-Chlorotoluene	5.0	4.0	3.9	80	78	2.5	65-135	
tert-Butylbenzene	5.0	3.4	3.4	68	68	0.0	65-135	
1,2,4-Trimethylbenzene	5.0	3.7	3.6	74	72	2.7	65-135	
sec-Butylbenzene	5.0	4.3	4.3	86	86	0.0	65-135	
Isopropyltoluene	5.0	3.4	3.3	68	66	3.0	65-135	
1,3-Dichlorobenzene	5.0	5.6	5.4	112	108	3.6	65-135	
1,4-Dichlorobenzene	5.0	5.8	5.6	116	112	3.5	65-135	
n-Butylbenzene	5.0	4.2	3.6	84	72	15.4	65-135	
1,2-Dichlorobenzene	5.0	5.4	5.2	108	104	3.8	65-135	
1,2-Dibromo-3-Chloropropane	5.0	10.9	10.1	218	202	7.6	65-135	S
1,2,4-Trichlorobenzene	5.0	5.6	5.0	112	100	11.3	65-135	
Hexachloro-1,3-butadiene	5.0	7.3	7.0	146	140	4.2	65-135	S
Naphthalene	5.0	5.6	5.4	112	108	3.6	65-135	
1,2,3-Trichlorobenzene	5.0	6.5	6.6	130	132	1.5	65-135	S
Surrogate Recovery (%)				MS	MSD			
Dibromofluoromethane				100	103		65-135	
1,2-Dichloroethane-d4				96	90		65-135	
Toluene-d8				67	75		65-135	
4-Bromofluorobenzene				106	107		65-135	

"S" Spike recovery outside acceptable recovery limits.

"R" High relative percent difference observed.

ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Paul Burke

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## Laboratory Control Sample

Date Analyzed: 7/23/2021					
	Spiked Conc. ( $\mu\text{g/L}$ )	LCS Response ( $\mu\text{g/L}$ )	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Dichlorodifluoromethane	5.0	4.1	82	80-120	
Chloromethane	5.0	4.3	86	80-120	
Vinyl chloride	5.0	4.6	92	80-120	
Bromomethane	5.0	4.4	88	80-120	
Chloroethane	5.0	4.3	86	80-120	
Trichlorofluoromethane	5.0	4.4	88	80-120	
1,1-Dichloroethene	5.0	4.8	96	80-120	
Methylene chloride	5.0	5.1	102	80-120	
Methyl <i>tert</i> -Butyl Ether (MTBE)	5.0	5.6	112	80-120	
<i>trans</i> -1,2-Dichloroethene	5.0	5.0	100	80-120	
1,1-Dichloroethane	5.0	5.6	112	80-120	
2,2-Dichloropropane	5.0	5.2	104	80-120	
<i>cis</i> -1,2-Dichloroethene	5.0	4.9	98	80-120	
Chloroform	5.0	5.0	100	80-120	
1,1,1-Trichloroethane (TCA)	5.0	4.9	98	80-120	
Carbon tetrachloride	5.0	5.0	100	80-120	
1,1-Dichloropropene	5.0	4.7	94	80-120	
Benzene	5.0	5.0	100	80-120	
1,2-Dichloroethane (EDC)	5.0	5.6	112	80-120	
Trichloroethene (TCE)	5.0	5.4	108	80-120	
1,2-Dichloropropane	5.0	5.9	118	80-120	
Dibromomethane	5.0	5.9	118	80-120	
Bromodichloromethane	5.0	5.9	118	80-120	
<i>cis</i> -1,3-Dichloropropene	5.0	6.0	120	80-120	
Toluene	5.0	5.0	100	80-120	
Trans-1,3-Dichloropropene	5.0	5.3	106	80-120	
1,1,2-Trichloroethane	5.0	5.6	112	80-120	
Tetrachloroethene (PCE)	5.0	5.8	116	80-120	
1,3-Dichloropropene	5.0	5.9	118	80-120	
Dibromochloromethane	5.0	5.3	106	80-120	
1,2-Dibromoethane (EDB)	5.0	5.4	108	80-120	
Chlorobenzene	5.0	5.6	112	80-120	
Ethylbenzene	5.0	4.3	86	80-120	
1,1,1,2-Tetrachloroethane	5.0	5.6	112	80-120	
Total Xylenes	15.0	12.5	83	80-120	
Styrene	5.0	4.1	82	80-120	

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## Laboratory Control Sample

Date Analyzed: GW-98A7-Initial					
	Spiked Conc. ( $\mu\text{g/L}$ )	LCS Response ( $\mu\text{g/L}$ )	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Bromoform	5.0	6.0	120	80-120	
Isopropylbenzene	5.0	4.2	84	80-120	
1,1,2,2-Tetrachloroethane	5.0	5.8	116	80-120	
Bromobenzene	5.0	6.0	120	80-120	
n-Propylbenzene	5.0	5.3	106	80-120	
1,2,3-Trichloropropane	5.0	5.4	108	80-120	
2-Chlorotoluene	5.0	5.3	106	80-120	
1,3,5-Trimethylbenzene	5.0	4.8	96	80-120	
4-Chlorotoluene	5.0	5.2	104	80-120	
tert-Butylbenzene	5.0	4.4	88	80-120	
1,2,4-Trimethylbenzene	5.0	4.8	96	80-120	
sec-Butylbenzene	5.0	5.7	114	80-120	
Isopropyltoluene	5.0	4.7	94	80-120	
1,3-Dichlorobenzene	5.0	5.4	108	80-120	
1,4-Dichlorobenzene	5.0	5.6	112	80-120	
n-Butylbenzene	5.0	5.1	102	80-120	
1,2-Dichlorobenzene	5.0	5.9	118	80-120	
1,2-Dibromo-3-Chloropropane	5.0	5.0	100	80-120	
1,2,4-Trichlorobenzene	5.0	5.7	114	80-120	
Hexachloro-1,3-butadiene	5.0	5.7	114	80-120	
Naphthalene	5.0	5.8	116	80-120	
1,2,3-Trichlorobenzene	5.0	5.9	118	80-120	
Surrogate Recovery					
Dibromofluoromethane		96	65-135		
1,2-Dichloroethane-d4		112	65-135		
Toluene-d8		115	65-135		
4-Bromofluorobenzene		95	65-135		

ANALYSES PERFORMED BY: Paul Burke

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## QA/QC for Volatile Organic Compounds by EPA Method 8260D in Soil

Matrix Spike Sample Identification: AS5-14-14.5								
	Date Analyzed: 7/23/2021							
	Spiked Conc. (mg/kg)	MS Response (mg/kg)	MSD Response (mg/kg)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Dichlorodifluoromethane	0.25	0.23	0.22	92	88	4.4	65-135	
Chloromethane	0.25	0.22	0.22	88	88	0.0	65-135	
Vinyl chloride	0.25	0.30	0.23	120	92	26.4	65-135	
Bromomethane	0.25	0.24	0.24	96	96	0.0	65-135	
Chloroethane	0.25	0.22	0.19	88	76	14.6	65-135	
Trichlorofluoromethane	0.25	0.23	0.22	92	88	4.4	65-135	
1,1-Dichloroethene	0.25	0.26	0.24	104	96	8.0	65-135	
Methylene chloride	0.25	0.33	0.27	132	108	20.0	65-135	
Methyl <i>tert</i> -Butyl Ether (MTBE)	0.25	0.26	0.26	104	104	0.0	65-135	
<i>trans</i> -1,2-Dichloroethene	0.25	0.25	0.25	100	100	0.0	65-135	
1,1-Dichloroethane	0.25	0.28	0.31	112	124	10.2	65-135	
2,2-Dichloropropane	0.25	0.29	0.28	116	112	3.5	65-135	
<i>cis</i> -1,2-Dichloroethene	0.25	0.25	0.25	100	100	0.0	65-135	
Chloroform	0.25	0.27	0.26	108	104	3.8	65-135	
1,1,1-Trichloroethane (TCA)	0.25	0.00	0.22	0	88	200.0	65-135	S,R
Carbon tetrachloride	0.25	0.28	0.27	112	108	3.6	65-135	
1,1-Dichloropropene	0.25	0.23	0.24	92	96	4.3	65-135	
Benzene	0.25	0.26	0.25	104	100	3.9	65-135	
1,2-Dichloroethane (EDC)	0.25	0.30	0.29	120	116	3.4	65-135	
Trichloroethene (TCE)	0.25	0.29	0.29	116	116	0.0	65-135	
1,2-Dichloropropane	0.25	0.31	0.31	124	124	0.0	65-135	
Dibromomethane	0.25	0.36	0.36	144	144	0.0	65-135	S
Bromodichloromethane	0.25	0.33	0.31	132	124	6.3	65-135	
<i>cis</i> -1,3-Dichloropropene	0.25	0.31	0.31	124	124	0.0	65-135	
Toluene	0.25	0.27	0.27	108	108	0.0	65-135	
Trans-1,3-Dichloropropene	0.25	0.25	0.40	100	160	46.2	65-135	S,R
1,1,2-Trichloroethane	0.25	0.41	0.51	164	204	21.7	65-135	S
Tetrachloroethene (PCE)	0.25	0.34	0.48	135	192	35.0	65-135	S
1,3-Dichloropropane	0.25	0.280	0.42	112	168	40.0	65-135	S,R
Dibromochloromethane	0.25	0.40	0.55	160	220	31.6	65-135	S
1,2-Dibromoethane (EDB)	0.25	0.35	0.35	140	140	0.0	65-135	S
Chlorobenzene	0.25	0.27	0.25	108	100	7.7	65-135	
Ethylbenzene	0.25	0.21	0.18	84	72	15.4	65-135	
1,1,1,2-Tetrachloroethane	0.25	0.44	0.38	176	152	14.6	65-135	S
Total Xylenes	0.75	0.55	0.48	73	64	13.6	65-135	S
Styrene	0.25	0.16	0.15	64	60	6.5	65-135	S

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## QA/QC for Volatile Organic Compounds by EPA Method 8260D in Soil

Matrix Spike Sample Identification: AS5-14-14.5								
	Date Analyzed: 7/23/2021							
	Spiked Conc. (mg/kg)	MS Response (mg/kg)	MSD Response (mg/kg)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Bromoform	0.25	0.45	0.38	180	152	16.9	65-135	S
Isopropylbenzene	0.25	0.17	0.15	68	60	12.5	65-135	S
1,1,2,2-Tetrachloroethane	0.25	0.42	0.40	168	160	4.9	65-135	S
Bromobenzene	0.25	0.26	0.24	104	96	8.0	65-135	
n-Propylbenzene	0.25	0.20	0.20	80	80	0.0	65-135	
1,2,3-Trichloropropane	0.25	0.44	0.39	176	156	12.0	65-135	S
2-Chlorotoluene	0.25	0.19	0.19	76	76	0.0	65-135	
1,3,5-Trimethylbenzene	0.25	0.18	0.18	72	72	0.0	65-135	
4-Chlorotoluene	0.25	0.19	0.20	76	80	5.1	65-135	
tert-Butylbenzene	0.25	0.15	0.17	60	68	12.5	65-135	S
1,2,4-Trimethylbenzene	0.25	0.17	0.18	69	72	4.5	65-135	
sec-Butylbenzene	0.25	0.21	0.21	84	84	0.0	65-135	
Isopropyltoluene	0.25	0.16	0.17	64	68	6.1	65-135	S
1,3-Dichlorobenzene	0.25	0.28	0.28	112	112	0.0	65-135	
1,4-Dichlorobenzene	0.25	0.29	0.29	116	116	0.0	65-135	
n-Butylbenzene	0.25	0.18	0.20	72	80	10.5	65-135	
1,2-Dichlorobenzene	0.25	0.27	0.27	108	108	0.0	65-135	
1,2-Dibromo-3-Chloropropane	0.25	0.41	0.43	164	172	4.8	65-135	S
1,2,4-Trichlorobenzene	0.25	0.23	0.28	92	112	19.6	65-135	
Hexachloro-1,3-butadiene	0.25	0.36	0.33	144	132	8.7	65-135	S
Naphthalene	0.25	0.19	0.23	76	92	19.0	65-135	
1,2,3-Trichlorobenzene	0.25	0.29	0.32	116	128	9.8	65-135	
Surrogate Recovery (%)				MS	MSD			
Dibromofluoromethane				110	98		65-135	
1,2-Dichloroethane-d4				121	112		65-135	
Toluene-d8				133	118		65-135	
4-Bromofluorobenzene				102	84		65-135	

"S" Spike recovery outside acceptable recovery limits.

"R" High relative percent difference observed.

ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Paul Burke

# Libby Environmental, Inc.

ATI Acid Sump Investigation PROJECT  
GSI Water Solutions  
Albany, Oregon  
Libby Project # L210723-40  
Client Project # 168.031.002

3322 South Bay Road NE  
Olympia, WA 98506  
Phone: (360) 352-2110  
FAX: (360) 352-4154  
Email: libbyenv@gmail.com

## Laboratory Control Sample

Date Analyzed: 7/23/2021

	Spiked Conc. (mg/kg)	LCS Response (mg/kg)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Dichlorodifluoromethane	0.25	0.21	84	80-120	
Chloromethane	0.25	0.22	88	80-120	
Vinyl chloride	0.25	0.23	92	80-120	
Bromomethane	0.25	0.22	88	80-120	
Chloroethane	0.25	0.22	88	80-120	
Trichlorofluoromethane	0.25	0.22	88	80-120	
1,1-Dichloroethene	0.25	0.24	96	80-120	
Methylene chloride	0.25	0.26	104	80-120	
Methyl <i>tert</i> -Butyl Ether (MTBE)	0.25	0.28	112	80-120	
<i>trans</i> -1,2-Dichloroethene	0.25	0.25	100	80-120	
1,1-Dichloroethane	0.25	0.28	112	80-120	
2,2-Dichloropropane	0.25	0.26	104	80-120	
<i>cis</i> -1,2-Dichloroethene	0.25	0.25	100	80-120	
Chloroform	0.25	0.25	100	80-120	
1,1,1-Trichloroethane (TCA)	0.25	0.24	96	80-120	
Carbon tetrachloride	0.25	0.25	100	80-120	
1,1-Dichloropropene	0.25	0.23	92	80-120	
Benzene	0.25	0.25	100	80-120	
1,2-Dichloroethane (EDC)	0.25	0.28	112	80-120	
Trichloroethene (TCE)	0.25	0.27	108	80-120	
1,2-Dichloropropane	0.25	0.29	116	80-120	
Dibromomethane	0.25	0.30	120	80-120	
Bromodichloromethane	0.25	0.29	116	80-120	
<i>cis</i> -1,3-Dichloropropene	0.25	0.30	120	80-120	
Toluene	0.25	0.25	100	80-120	
Trans-1,3-Dichloropropene	0.25	0.27	108	80-120	
1,1,2-Trichloroethane	0.25	0.28	112	80-120	
Tetrachloroethene (PCE)	0.25	0.29	116	80-120	
1,3-Dichloropropane	0.25	0.30	120	80-120	
Dibromochloromethane	0.25	0.27	108	80-120	
1,2-Dibromoethane (EDB)	0.25	0.27	108	80-120	
Chlorobenzene	0.25	0.28	112	80-120	
Ethylbenzene	0.25	0.22	88	80-120	
1,1,1,2-Tetrachloroethane	0.25	0.28	112	80-120	
Total Xylenes	0.75	0.63	84	80-120	
Styrene	0.25	0.21	84	80-120	

# Libby Environmental, Inc.

ATI Acid Sump Investigation PROJECT  
GSI Water Solutions  
Albany, Oregon  
Libby Project # L210723-40  
Client Project # 168.031.002

3322 South Bay Road NE  
Olympia, WA 98506  
Phone: (360) 352-2110  
FAX: (360) 352-4154  
Email: libbyenv@gmail.com

## Laboratory Control Sample

Date Analyzed: 7/23/2021

	Spiked Conc. (mg/kg)	LCS Response (mg/kg)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Bromoform	0.25	0.30	120	80-120	
Isopropylbenzene	0.25	0.21	84	80-120	
1,1,2,2-Tetrachloroethane	0.25	0.29	116	80-120	
Bromobenzene	0.25	0.30	120	80-120	
n-Propylbenzene	0.25	0.27	108	80-120	
1,2,3-Trichloropropane	0.25	0.27	108	80-120	
2-Chlorotoluene	0.25	0.26	104	80-120	
1,3,5-Trimethylbenzene	0.25	0.24	96	80-120	
4-Chlorotoluene	0.25	0.26	104	80-120	
tert-Butylbenzene	0.25	0.22	88	80-120	
1,2,4-Trimethylbenzene	0.25	0.24	96	80-120	
sec-Butylbenzene	0.25	0.29	116	80-120	
Isopropyltoluene	0.25	0.23	92	80-120	
1,3-Dichlorobenzene	0.25	0.27	108	80-120	
1,4-Dichlorobenzene	0.25	0.28	112	80-120	
n-Butylbenzene	0.25	0.25	100	80-120	
1,2-Dichlorobenzene	0.25	0.30	120	80-120	
1,2-Dibromo-3-Chloropropane	0.25	0.25	100	80-120	
1,2,4-Trichlorobenzene	0.25	0.28	112	80-120	
Hexachloro-1,3-butadiene	0.25	0.28	112	80-120	
Naphthalene	0.25	0.29	116	80-120	
1,2,3-Trichlorobenzene	0.25	0.30	120	80-120	

### Surrogate Recovery

Dibromofluoromethane	96	65-135
1,2-Dichloroethane-d4	112	65-135
Toluene-d8	115	65-135
4-Bromofluorobenzene	95	65-135

ANALYSES PERFORMED BY: Paul Burke



**ANALYTICAL REPORT**

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Thursday, August 12, 2021

Renee Fowler  
GSI Water Solutions  
55 SW Yamhill St, Ste 300  
Portland, OR 97209

RE: A1G0674 - ATI Acid Sump - 0168

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A1G0674, which was received by the laboratory on 7/23/2021 at 4:05:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: [pnerenberg@apex-labs.com](mailto:pnerenberg@apex-labs.com), or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of sample receipt, unless prior arrangements have been made.

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**Cooler Receipt Information**

(See Cooler Receipt Form for details)

Cooler #1                    5.6 degC

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This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.

All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.

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Apex Laboratories

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A handwritten signature in black ink that reads "Philip Nerenberg".

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

GSI Water Solutions55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: ATI Acid Sump

Project Number: 0168

Project Manager: Renee Fowler

Report ID:

A1G0674 - 08 12 21 1344

## ANALYTICAL REPORT FOR SAMPLES

## SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
98A5_8.0-8.5	A1G0674-01	Soil	07/22/21 11:25	07/23/21 16:05
98A5_14.5-15.0	A1G0674-02	Soil	07/22/21 10:55	07/23/21 16:05
98A4_8.0-9.0	A1G0674-03	Soil	07/22/21 12:10	07/23/21 16:05
98a3_8.0-9.0	A1G0674-04	Soil	07/22/21 12:50	07/23/21 16:05
98a2_8.0-9.0	A1G0674-05	Soil	07/22/21 14:40	07/23/21 16:05
98a7_5.0-6.0	A1G0674-06	Soil	07/23/21 11:20	07/23/21 16:05
98a6_15.9-16.4	A1G0674-07	Soil	07/22/21 16:15	07/23/21 16:05
GW-AS9-initial	A1G0674-08	Water	07/21/21 14:40	07/23/21 16:05

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Philip Nerenberg, Lab Director

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## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

GSI Water Solutions55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: ATI Acid Sump

Project Number: 0168

Project Manager: Renee Fowler

Report ID:

A1G0674 - 08 12 21 1344

## ANALYTICAL SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>98A5_8.0-8.5 (A1G0674-01)</b>		<b>Matrix: Soil</b>						<b>Batch: 1070802</b>
Acetone	ND	0.363	0.726	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Acrylonitrile	ND	0.0363	0.0726	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Benzene	ND	0.00363	0.00726	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Bromobenzene	ND	0.00907	0.0181	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Bromochloromethane	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Bromodichloromethane	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Bromoform	ND	0.0726	0.0726	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Bromomethane	ND	0.363	0.363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
2-Butanone (MEK)	ND	0.181	0.363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
n-Butylbenzene	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
sec-Butylbenzene	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
tert-Butylbenzene	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Carbon disulfide	ND	0.363	0.363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Carbon tetrachloride	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Chlorobenzene	ND	0.00907	0.0181	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Chloroethane	ND	0.363	0.363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Chloroform	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Chloromethane	ND	0.0907	0.181	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
2-Chlorotoluene	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
4-Chlorotoluene	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Dibromochloromethane	ND	0.0363	0.0726	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
1,2-Dibromo-3-chloropropane	ND	0.0907	0.181	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
1,2-Dibromoethane (EDB)	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Dibromomethane	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
1,2-Dichlorobenzene	ND	0.00907	0.0181	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
1,3-Dichlorobenzene	ND	0.00907	0.0181	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
1,4-Dichlorobenzene	ND	0.00907	0.0181	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Dichlorodifluoromethane	ND	0.0363	0.0726	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
1,1-Dichloroethane	ND	0.00907	0.0181	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
1,2-Dichloroethane (EDC)	ND	0.00907	0.0181	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
<b>1,1-Dichloroethene</b>	<b>0.0130</b>	0.00907	0.0181	mg/kg wet	50	07/26/21 19:14	5035A/8260D	J
cis-1,2-Dichloroethene	ND	0.00907	0.0181	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
trans-1,2-Dichloroethene	ND	0.00907	0.0181	mg/kg wet	50	07/26/21 19:14	5035A/8260D	

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Philip Nerenberg, Lab Director

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## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

GSI Water Solutions55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: ATI Acid Sump

Project Number: 0168

Project Manager: Renee Fowler

Report ID:

A1G0674 - 08 12 21 1344

## ANALYTICAL SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>98A5_8.0-8.5 (A1G0674-01)</b>		<b>Matrix: Soil</b>			<b>Batch: 1070802</b>			
1,2-Dichloropropane	ND	0.00907	0.0181	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
1,3-Dichloropropane	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
2,2-Dichloropropane	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
1,1-Dichloropropene	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
cis-1,3-Dichloropropene	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
trans-1,3-Dichloropropene	ND	0.0363	0.0726	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Ethylbenzene	ND	0.00907	0.0181	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Hexachlorobutadiene	ND	0.0363	0.0726	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
2-Hexanone	ND	0.181	0.363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Isopropylbenzene	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
4-Isopropyltoluene	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Methylene chloride	ND	0.181	0.363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
4-Methyl-2-pentanone (MiBK)	ND	0.181	0.363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Methyl tert-butyl ether (MTBE)	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Naphthalene	ND	0.0363	0.0726	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
n-Propylbenzene	ND	0.00907	0.0181	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Styrene	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
1,1,1,2-Tetrachloroethane	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
1,1,2,2-Tetrachloroethane	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Tetrachloroethene (PCE)	ND	0.00907	0.0181	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Toluene	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
1,2,3-Trichlorobenzene	ND	0.0907	0.181	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
1,2,4-Trichlorobenzene	ND	0.0907	0.181	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
1,1,1-Trichloroethane	ND	0.00907	0.0181	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
1,1,2-Trichloroethane	ND	0.00907	0.0181	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Trichloroethene (TCE)	ND	0.00907	0.0181	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Trichlorofluoromethane	ND	0.0726	0.0726	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
1,2,3-Trichloropropane	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
1,2,4-Trimethylbenzene	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
1,3,5-Trimethylbenzene	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
Vinyl chloride	ND	0.00907	0.0181	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
m,p-Xylene	ND	0.0181	0.0363	mg/kg wet	50	07/26/21 19:14	5035A/8260D	
o-Xylene	ND	0.00907	0.0181	mg/kg wet	50	07/26/21 19:14	5035A/8260D	

Apex Laboratories

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

**GSI Water Solutions**55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: **ATI Acid Sump**Project Number: **0168**Project Manager: **Renee Fowler****Report ID:****A1G0674 - 08 12 21 1344**

## ANALYTICAL SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>98A5_8.0-8.5 (A1G0674-01)</b>								
Surrogate: 1,4-Difluorobenzene (Surr)								
		Recovery: 103 %	Limits: 80-120 %	1		07/26/21 19:14	5035A/8260D	
Toluene-d8 (Surr)		103 %	80-120 %	1		07/26/21 19:14	5035A/8260D	
4-Bromofluorobenzene (Surr)		97 %	79-120 %	1		07/26/21 19:14	5035A/8260D	
<b>98A5_14.5-15.0 (A1G0674-02)</b>								
Matrix: Soil								
<b>Batch: 1070802</b>								
Acetone	ND	0.441	0.882	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Acrylonitrile	ND	0.0441	0.0882	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Benzene	ND	0.00441	0.00882	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Bromobenzene	ND	0.0110	0.0220	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Bromochloromethane	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Bromodichloromethane	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Bromoform	ND	0.0882	0.0882	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Bromomethane	ND	0.441	0.441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
2-Butanone (MEK)	ND	0.220	0.441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
n-Butylbenzene	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
sec-Butylbenzene	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
tert-Butylbenzene	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Carbon disulfide	ND	0.441	0.441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Carbon tetrachloride	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Chlorobenzene	ND	0.0110	0.0220	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Chloroethane	ND	0.441	0.441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Chloroform	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Chloromethane	ND	0.110	0.220	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
2-Chlorotoluene	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
4-Chlorotoluene	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Dibromochloromethane	ND	0.0441	0.0882	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
1,2-Dibromo-3-chloropropane	ND	0.110	0.220	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
1,2-Dibromoethane (EDB)	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Dibromomethane	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
1,2-Dichlorobenzene	ND	0.0110	0.0220	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
1,3-Dichlorobenzene	ND	0.0110	0.0220	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
1,4-Dichlorobenzene	ND	0.0110	0.0220	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Dichlorodifluoromethane	ND	0.0441	0.0882	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
<b>1,1-Dichloroethane</b>	<b>0.0248</b>	0.0110	0.0220	mg/kg wet	50	07/26/21 18:20	5035A/8260D	

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

**GSI Water Solutions**55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: **ATI Acid Sump**Project Number: **0168**Project Manager: **Renee Fowler****Report ID:****A1G0674 - 08 12 21 1344**

## ANALYTICAL SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>98A5_14.5-15.0 (A1G0674-02)</b>				<b>Matrix: Soil</b>			<b>Batch: 1070802</b>	
1,2-Dichloroethane (EDC)	ND	0.0110	0.0220	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
<b>1,1-Dichloroethene</b>	<b>0.119</b>	0.0110	0.0220	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
<b>cis-1,2-Dichloroethene</b>	<b>0.0370</b>	0.0110	0.0220	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
trans-1,2-Dichloroethene	ND	0.0110	0.0220	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
1,2-Dichloropropane	ND	0.0110	0.0220	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
1,3-Dichloropropane	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
2,2-Dichloropropane	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
1,1-Dichloropropene	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
cis-1,3-Dichloropropene	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
trans-1,3-Dichloropropene	ND	0.0441	0.0882	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Ethylbenzene	ND	0.0110	0.0220	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Hexachlorobutadiene	ND	0.0441	0.0882	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
2-Hexanone	ND	0.220	0.441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Isopropylbenzene	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
4-Isopropyltoluene	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Methylene chloride	ND	0.220	0.441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
4-Methyl-2-pentanone (MiBK)	ND	0.220	0.441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Methyl tert-butyl ether (MTBE)	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Naphthalene	ND	0.0441	0.0882	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
n-Propylbenzene	ND	0.0110	0.0220	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Styrene	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
1,1,1,2-Tetrachloroethane	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
1,1,2,2-Tetrachloroethane	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
<b>Tetrachloroethene (PCE)</b>	<b>0.0161</b>	0.0110	0.0220	mg/kg wet	50	07/26/21 18:20	5035A/8260D	<b>J</b>
Toluene	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
1,2,3-Trichlorobenzene	ND	0.110	0.220	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
1,2,4-Trichlorobenzene	ND	0.110	0.220	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
<b>1,1,1-Trichloroethane</b>	<b>0.0158</b>	0.0110	0.0220	mg/kg wet	50	07/26/21 18:20	5035A/8260D	<b>J</b>
1,1,2-Trichloroethane	ND	0.0110	0.0220	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
<b>Trichloroethene (TCE)</b>	<b>0.0920</b>	0.0110	0.0220	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Trichlorofluoromethane	ND	0.0882	0.0882	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
1,2,3-Trichloropropane	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
1,2,4-Trimethylbenzene	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

**GSI Water Solutions**55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: **ATI Acid Sump**Project Number: **0168****Report ID:**Project Manager: **Renee Fowler****A1G0674 - 08 12 21 1344**

## ANALYTICAL SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>98A5_14.5-15.0 (A1G0674-02)</b>				<b>Matrix: Soil</b>			<b>Batch: 1070802</b>	
1,3,5-Trimethylbenzene	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
Vinyl chloride	ND	0.0110	0.0220	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
m,p-Xylene	ND	0.0220	0.0441	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
o-Xylene	ND	0.0110	0.0220	mg/kg wet	50	07/26/21 18:20	5035A/8260D	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery:</i>	<i>103 %</i>	<i>Limits:</i>	<i>80-120 %</i>	<i>I</i>	<i>07/26/21 18:20</i>	<i>5035A/8260D</i>
<i>Toluene-d8 (Surr)</i>			<i>102 %</i>		<i>80-120 %</i>	<i>I</i>	<i>07/26/21 18:20</i>	<i>5035A/8260D</i>
<i>4-Bromofluorobenzene (Surr)</i>			<i>96 %</i>		<i>79-120 %</i>	<i>I</i>	<i>07/26/21 18:20</i>	<i>5035A/8260D</i>
<b>98A4_8.0-9.0 (A1G0674-03)</b>				<b>Matrix: Soil</b>			<b>Batch: 1070802</b>	
Acetone	ND	0.412	0.824	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Acrylonitrile	ND	0.0412	0.0824	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Benzene	ND	0.00412	0.00824	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Bromobenzene	ND	0.0103	0.0206	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Bromochloromethane	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Bromodichloromethane	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Bromoform	ND	0.0824	0.0824	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Bromomethane	ND	0.412	0.412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
2-Butanone (MEK)	ND	0.206	0.412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
n-Butylbenzene	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
sec-Butylbenzene	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
tert-Butylbenzene	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Carbon disulfide	ND	0.412	0.412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Carbon tetrachloride	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Chlorobenzene	ND	0.0103	0.0206	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Chloroethane	ND	0.412	0.412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Chloroform	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Chloromethane	ND	0.103	0.206	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
2-Chlorotoluene	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
4-Chlorotoluene	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Dibromochloromethane	ND	0.0412	0.0824	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
1,2-Dibromo-3-chloropropane	ND	0.103	0.206	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
1,2-Dibromoethane (EDB)	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Dibromomethane	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
1,2-Dichlorobenzene	ND	0.0103	0.0206	mg/kg wet	50	07/26/21 20:08	5035A/8260D	

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Philip Nerenberg, Lab Director

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## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

GSI Water Solutions55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: ATI Acid Sump

Project Number: 0168

Project Manager: Renee Fowler

Report ID:

A1G0674 - 08 12 21 1344

## ANALYTICAL SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>98A4_8.0-9.0 (A1G0674-03)</b>		<b>Matrix: Soil</b>			<b>Batch: 1070802</b>			
1,3-Dichlorobenzene	ND	0.0103	0.0206	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
1,4-Dichlorobenzene	ND	0.0103	0.0206	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Dichlorodifluoromethane	ND	0.0412	0.0824	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
1,1-Dichloroethane	ND	0.0103	0.0206	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
1,2-Dichloroethane (EDC)	ND	0.0103	0.0206	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
1,1-Dichloroethene	ND	0.0103	0.0206	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
cis-1,2-Dichloroethene	ND	0.0103	0.0206	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
trans-1,2-Dichloroethene	ND	0.0103	0.0206	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
1,2-Dichloropropane	ND	0.0103	0.0206	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
1,3-Dichloropropane	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
2,2-Dichloropropane	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
1,1-Dichloropropene	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
cis-1,3-Dichloropropene	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
trans-1,3-Dichloropropene	ND	0.0412	0.0824	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Ethylbenzene	ND	0.0103	0.0206	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Hexachlorobutadiene	ND	0.0412	0.0824	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
2-Hexanone	ND	0.206	0.412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Isopropylbenzene	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
4-Isopropyltoluene	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Methylene chloride	ND	0.206	0.412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
4-Methyl-2-pentanone (MiBK)	ND	0.206	0.412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Methyl tert-butyl ether (MTBE)	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Naphthalene	ND	0.0412	0.0824	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
n-Propylbenzene	ND	0.0103	0.0206	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Styrene	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
1,1,1,2-Tetrachloroethane	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
1,1,2,2-Tetrachloroethane	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Tetrachloroethene (PCE)	ND	0.0103	0.0206	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Toluene	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
1,2,3-Trichlorobenzene	ND	0.103	0.206	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
1,2,4-Trichlorobenzene	ND	0.103	0.206	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
1,1,1-Trichloroethane	ND	0.0103	0.0206	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
1,1,2-Trichloroethane	ND	0.0103	0.0206	mg/kg wet	50	07/26/21 20:08	5035A/8260D	

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

GSI Water Solutions55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: ATI Acid Sump

Project Number: 0168

Project Manager: Renee Fowler

Report ID:

A1G0674 - 08 12 21 1344

## ANALYTICAL SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>98A4_8.0-9.0 (A1G0674-03)</b>		<b>Matrix: Soil</b>			<b>Batch: 1070802</b>			
Trichloroethene (TCE)	ND	0.0103	0.0206	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Trichlorofluoromethane	ND	0.0824	0.0824	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
1,2,3-Trichloropropane	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
1,2,4-Trimethylbenzene	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
1,3,5-Trimethylbenzene	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Vinyl chloride	ND	0.0103	0.0206	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
m,p-Xylene	ND	0.0206	0.0412	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
o-Xylene	ND	0.0103	0.0206	mg/kg wet	50	07/26/21 20:08	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		Recovery: 103 %	Limits: 80-120 %	1	07/26/21 20:08	5035A/8260D		
Toluene-d8 (Surr)		102 %	80-120 %	1	07/26/21 20:08	5035A/8260D		
4-Bromofluorobenzene (Surr)		98 %	79-120 %	1	07/26/21 20:08	5035A/8260D		
<b>98a3_8.0-9.0 (A1G0674-04)</b>		<b>Matrix: Soil</b>			<b>Batch: 1070802</b>			
Acetone	ND	0.461	0.923	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Acrylonitrile	ND	0.0461	0.0923	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Benzene	ND	0.00461	0.00923	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Bromobenzene	ND	0.0115	0.0231	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Bromochloromethane	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Bromodichloromethane	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Bromoform	ND	0.0923	0.0923	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Bromomethane	ND	0.461	0.461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
2-Butanone (MEK)	ND	0.231	0.461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
n-Butylbenzene	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
sec-Butylbenzene	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
tert-Butylbenzene	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Carbon disulfide	ND	0.461	0.461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Carbon tetrachloride	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Chlorobenzene	ND	0.0115	0.0231	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Chloroethane	ND	0.461	0.461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Chloroform	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Chloromethane	ND	0.115	0.231	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
2-Chlorotoluene	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
4-Chlorotoluene	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Dibromochloromethane	ND	0.0461	0.0923	mg/kg wet	50	07/26/21 20:35	5035A/8260D	

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## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

**GSI Water Solutions**55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: **ATI Acid Sump**Project Number: **0168**Project Manager: **Renee Fowler****Report ID:****A1G0674 - 08 12 21 1344**

## ANALYTICAL SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>98a3_8.0-9.0 (A1G0674-04)</b>				<b>Matrix: Soil</b>			<b>Batch: 1070802</b>	
1,2-Dibromo-3-chloropropane	ND	0.115	0.231	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
1,2-Dibromoethane (EDB)	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Dibromomethane	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
1,2-Dichlorobenzene	ND	0.0115	0.0231	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
1,3-Dichlorobenzene	ND	0.0115	0.0231	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
1,4-Dichlorobenzene	ND	0.0115	0.0231	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Dichlorodifluoromethane	ND	0.0461	0.0923	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
1,1-Dichloroethane	ND	0.0115	0.0231	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
1,2-Dichloroethane (EDC)	ND	0.0115	0.0231	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
1,1-Dichloroethene	ND	0.0115	0.0231	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
cis-1,2-Dichloroethene	ND	0.0115	0.0231	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
trans-1,2-Dichloroethene	ND	0.0115	0.0231	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
1,2-Dichloropropane	ND	0.0115	0.0231	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
1,3-Dichloropropane	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
2,2-Dichloropropane	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
1,1-Dichloropropene	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
cis-1,3-Dichloropropene	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
trans-1,3-Dichloropropene	ND	0.0461	0.0923	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Ethylbenzene	ND	0.0115	0.0231	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Hexachlorobutadiene	ND	0.0461	0.0923	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
2-Hexanone	ND	0.231	0.461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Isopropylbenzene	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
4-Isopropyltoluene	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Methylene chloride	ND	0.231	0.461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
4-Methyl-2-pentanone (MiBK)	ND	0.231	0.461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Methyl tert-butyl ether (MTBE)	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Naphthalene	ND	0.0461	0.0923	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
n-Propylbenzene	ND	0.0115	0.0231	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Styrene	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
1,1,1,2-Tetrachloroethane	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
1,1,2,2-Tetrachloroethane	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Tetrachloroethene (PCE)	ND	0.0115	0.0231	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Toluene	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	

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Philip Nerenberg, Lab Director

Page 10 of 47



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

**GSI Water Solutions**55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: **ATI Acid Sump**Project Number: **0168**Project Manager: **Renee Fowler****Report ID:****A1G0674 - 08 12 21 1344**

## ANALYTICAL SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>98a3_8.0-9.0 (A1G0674-04)</b>								
1,2,3-Trichlorobenzene	ND	0.115	0.231	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
1,2,4-Trichlorobenzene	ND	0.115	0.231	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
1,1,1-Trichloroethane	ND	0.0115	0.0231	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
1,1,2-Trichloroethane	ND	0.0115	0.0231	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Trichloroethene (TCE)	ND	0.0115	0.0231	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Trichlorofluoromethane	ND	0.0923	0.0923	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
1,2,3-Trichloropropane	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
1,2,4-Trimethylbenzene	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
1,3,5-Trimethylbenzene	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
Vinyl chloride	ND	0.0115	0.0231	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
m,p-Xylene	ND	0.0231	0.0461	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
o-Xylene	ND	0.0115	0.0231	mg/kg wet	50	07/26/21 20:35	5035A/8260D	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>				Recovery:	103 %	Limits:	80-120 %	I
<i>Toluene-d8 (Surr)</i>					104 %		80-120 %	I
<i>4-Bromofluorobenzene (Surr)</i>					96 %		79-120 %	I
<b>98a2_8.0-9.0 (A1G0674-05)</b>								
Acetone	ND	0.368	0.736	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Acrylonitrile	ND	0.0368	0.0736	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Benzene	ND	0.00368	0.00736	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Bromobenzene	ND	0.00920	0.0184	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Bromochloromethane	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Bromodichloromethane	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Bromoform	ND	0.0736	0.0736	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Bromomethane	ND	0.368	0.368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
2-Butanone (MEK)	ND	0.184	0.368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
n-Butylbenzene	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
sec-Butylbenzene	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
tert-Butylbenzene	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Carbon disulfide	ND	0.368	0.368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Carbon tetrachloride	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Chlorobenzene	ND	0.00920	0.0184	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Chloroethane	ND	0.368	0.368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Chloroform	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

GSI Water Solutions55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: ATI Acid Sump

Project Number: 0168

Project Manager: Renee Fowler

Report ID:

A1G0674 - 08 12 21 1344

## ANALYTICAL SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>98a2_8.0-9.0 (A1G0674-05)</b>				<b>Matrix: Soil</b>			<b>Batch: 1070802</b>	
Chloromethane	ND	0.0920	0.184	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
2-Chlorotoluene	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
4-Chlorotoluene	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Dibromochloromethane	ND	0.0368	0.0736	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
1,2-Dibromo-3-chloropropane	ND	0.0920	0.184	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
1,2-Dibromoethane (EDB)	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Dibromomethane	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
1,2-Dichlorobenzene	ND	0.00920	0.0184	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
1,3-Dichlorobenzene	ND	0.00920	0.0184	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
1,4-Dichlorobenzene	ND	0.00920	0.0184	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Dichlorodifluoromethane	ND	0.0368	0.0736	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
1,1-Dichloroethane	ND	0.00920	0.0184	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
1,2-Dichloroethane (EDC)	ND	0.00920	0.0184	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
1,1-Dichloroethene	ND	0.00920	0.0184	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
cis-1,2-Dichloroethene	ND	0.00920	0.0184	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
trans-1,2-Dichloroethene	ND	0.00920	0.0184	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
1,2-Dichloropropane	ND	0.00920	0.0184	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
1,3-Dichloropropane	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
2,2-Dichloropropane	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
1,1-Dichloropropene	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
cis-1,3-Dichloropropene	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
trans-1,3-Dichloropropene	ND	0.0368	0.0736	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Ethylbenzene	ND	0.00920	0.0184	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Hexachlorobutadiene	ND	0.0368	0.0736	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
2-Hexanone	ND	0.184	0.368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Isopropylbenzene	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
4-Isopropyltoluene	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Methylene chloride	ND	0.184	0.368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
4-Methyl-2-pentanone (MiBK)	ND	0.184	0.368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Methyl tert-butyl ether (MTBE)	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Naphthalene	ND	0.0368	0.0736	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
n-Propylbenzene	ND	0.00920	0.0184	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Styrene	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

**GSI Water Solutions**55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: **ATI Acid Sump**Project Number: **0168**Project Manager: **Renee Fowler****Report ID:****A1G0674 - 08 12 21 1344**

## ANALYTICAL SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>98a2_8.0-9.0 (A1G0674-05)</b>								
1,1,1,2-Tetrachloroethane	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
1,1,2,2-Tetrachloroethane	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Tetrachloroethene (PCE)	ND	0.00920	0.0184	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Toluene	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
1,2,3-Trichlorobenzene	ND	0.0920	0.184	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
1,2,4-Trichlorobenzene	ND	0.0920	0.184	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
1,1,1-Trichloroethane	ND	0.00920	0.0184	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
1,1,2-Trichloroethane	ND	0.00920	0.0184	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Trichloroethene (TCE)	ND	0.00920	0.0184	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Trichlorofluoromethane	ND	0.0736	0.0736	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
1,2,3-Trichloropropane	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
1,2,4-Trimethylbenzene	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
1,3,5-Trimethylbenzene	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Vinyl chloride	ND	0.00920	0.0184	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
m,p-Xylene	ND	0.0184	0.0368	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
o-Xylene	ND	0.00920	0.0184	mg/kg wet	50	07/26/21 21:02	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		Recovery: 104 %	Limits: 80-120 %	1	07/26/21 21:02	5035A/8260D		
Toluene-d8 (Surr)		105 %	80-120 %	1	07/26/21 21:02	5035A/8260D		
4-Bromofluorobenzene (Surr)		98 %	79-120 %	1	07/26/21 21:02	5035A/8260D		

<b>98a7_5.0-6.0 (A1G0674-06)</b>								
Acetone	ND	0.412	0.824	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
Acrylonitrile	ND	0.0412	0.0824	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
Benzene	ND	0.00412	0.00824	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
Bromobenzene	ND	0.0103	0.0206	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
Bromochloromethane	ND	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
Bromodichloromethane	ND	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
Bromoform	ND	0.0824	0.0824	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
Bromomethane	ND	0.412	0.412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
2-Butanone (MEK)	ND	0.206	0.412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
n-Butylbenzene	ND	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
<b>sec-Butylbenzene</b>	<b>0.0322</b>	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	J
tert-Butylbenzene	ND	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
Carbon disulfide	ND	0.412	0.412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

GSI Water Solutions55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: ATI Acid Sump

Project Number: 0168

Project Manager: Renee Fowler

Report ID:

A1G0674 - 08 12 21 1344

## ANALYTICAL SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>98a7_5.0-6.0 (A1G0674-06)</b>				<b>Matrix: Soil</b>			<b>Batch: 1070843</b>	
Carbon tetrachloride	ND	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
Chlorobenzene	ND	0.0103	0.0206	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
Chloroethane	ND	0.412	0.412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
Chloroform	ND	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
Chloromethane	ND	0.103	0.206	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
2-Chlorotoluene	ND	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
4-Chlorotoluene	ND	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
Dibromochloromethane	ND	0.0412	0.0824	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
1,2-Dibromo-3-chloropropane	ND	0.103	0.206	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
1,2-Dibromoethane (EDB)	ND	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
Dibromomethane	ND	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
1,2-Dichlorobenzene	ND	0.0103	0.0206	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
1,3-Dichlorobenzene	ND	0.0103	0.0206	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
1,4-Dichlorobenzene	ND	0.0103	0.0206	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
Dichlorodifluoromethane	ND	0.0412	0.0824	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
<b>1,1-Dichloroethane</b>	<b>0.134</b>	0.0103	0.0206	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
1,2-Dichloroethane (EDC)	ND	0.0103	0.0206	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
<b>1,1-Dichloroethene</b>	<b>0.457</b>	0.0103	0.0206	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
<b>cis-1,2-Dichloroethene</b>	<b>0.913</b>	0.0103	0.0206	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
trans-1,2-Dichloroethene	ND	0.0103	0.0206	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
1,2-Dichloropropane	ND	0.0103	0.0206	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
1,3-Dichloropropane	ND	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
2,2-Dichloropropane	ND	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
1,1-Dichloropropene	ND	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
cis-1,3-Dichloropropene	ND	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
trans-1,3-Dichloropropene	ND	0.0412	0.0824	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
Ethylbenzene	ND	0.0103	0.0206	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
Hexachlorobutadiene	ND	0.0412	0.0824	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
2-Hexanone	ND	0.206	0.412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
Isopropylbenzene	ND	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
4-Isopropyltoluene	ND	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
Methylene chloride	ND	0.206	0.412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
4-Methyl-2-pentanone (MiBK)	ND	0.206	0.412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

GSI Water Solutions55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: ATI Acid Sump

Project Number: 0168

Project Manager: Renee Fowler

Report ID:

A1G0674 - 08 12 21 1344

## ANALYTICAL SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>98a7_5.0-6.0 (A1G0674-06)</b>				<b>Matrix: Soil</b>			<b>Batch: 1070843</b>	
Methyl tert-butyl ether (MTBE)	ND	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
Naphthalene	ND	0.0412	0.0824	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
n-Propylbenzene	ND	0.0103	0.0206	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
Styrene	ND	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
1,1,1,2-Tetrachloroethane	ND	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
1,1,2,2-Tetrachloroethane	ND	0.0927	0.0927	mg/kg wet	50	07/27/21 17:16	5035A/8260D	R-02
<b>Tetrachloroethene (PCE)</b>	<b>0.137</b>	0.0103	0.0206	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
Toluene	ND	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
1,2,3-Trichlorobenzene	ND	0.103	0.206	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
1,2,4-Trichlorobenzene	ND	0.103	0.206	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
<b>1,1,1-Trichloroethane</b>	<b>0.0344</b>	0.0103	0.0206	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
1,1,2-Trichloroethane	ND	0.0103	0.0206	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
<b>Trichloroethene (TCE)</b>	<b>0.0540</b>	0.0103	0.0206	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
Trichlorofluoromethane	ND	0.0412	0.0824	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
1,2,3-Trichloropropane	ND	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
1,2,4-Trimethylbenzene	ND	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
1,3,5-Trimethylbenzene	ND	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
<b>Vinyl chloride</b>	<b>0.115</b>	0.0103	0.0206	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
m,p-Xylene	ND	0.0206	0.0412	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
o-Xylene	ND	0.0103	0.0206	mg/kg wet	50	07/27/21 17:16	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		Recovery: 103 %	Limits: 80-120 %	1	07/27/21 17:16	5035A/8260D		
Toluene-d8 (Surr)		100 %	80-120 %	1	07/27/21 17:16	5035A/8260D		
4-Bromofluorobenzene (Surr)		99 %	79-120 %	1	07/27/21 17:16	5035A/8260D		

<b>98a6_15.9-16.4 (A1G0674-07)</b>				<b>Matrix: Soil</b>			<b>Batch: 1070843</b>	
Acetone	ND	0.374	0.747	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Acrylonitrile	ND	0.0374	0.0747	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Benzene	ND	0.00374	0.00747	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Bromobenzene	ND	0.00934	0.0187	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Bromochloromethane	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Bromodichloromethane	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Bromoform	ND	0.0747	0.0747	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Bromomethane	ND	0.374	0.374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
2-Butanone (MEK)	ND	0.187	0.374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	

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## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

GSI Water Solutions55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: ATI Acid Sump

Project Number: 0168

Project Manager: Renee Fowler

Report ID:

A1G0674 - 08 12 21 1344

## ANALYTICAL SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>98a6_15.9-16.4 (A1G0674-07)</b>				<b>Matrix: Soil</b>			<b>Batch: 1070843</b>	
n-Butylbenzene	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
sec-Butylbenzene	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
tert-Butylbenzene	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Carbon disulfide	ND	0.374	0.374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Carbon tetrachloride	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Chlorobenzene	ND	0.00934	0.0187	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Chloroethane	ND	0.374	0.374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Chloroform	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Chloromethane	ND	0.0934	0.187	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
2-Chlorotoluene	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
4-Chlorotoluene	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Dibromochloromethane	ND	0.0374	0.0747	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
1,2-Dibromo-3-chloropropane	ND	0.0934	0.187	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
1,2-Dibromoethane (EDB)	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Dibromomethane	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
1,2-Dichlorobenzene	ND	0.00934	0.0187	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
1,3-Dichlorobenzene	ND	0.00934	0.0187	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
1,4-Dichlorobenzene	ND	0.00934	0.0187	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Dichlorodifluoromethane	ND	0.0374	0.0747	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
1,1-Dichloroethane	ND	0.00934	0.0187	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
1,2-Dichloroethane (EDC)	ND	0.00934	0.0187	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
1,1-Dichloroethene	ND	0.0187	0.0187	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
cis-1,2-Dichloroethene	ND	0.00934	0.0187	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
trans-1,2-Dichloroethene	ND	0.00934	0.0187	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
1,2-Dichloropropane	ND	0.00934	0.0187	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
1,3-Dichloropropane	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
2,2-Dichloropropane	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
1,1-Dichloropropene	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
cis-1,3-Dichloropropene	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
trans-1,3-Dichloropropene	ND	0.0374	0.0747	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Ethylbenzene	ND	0.00934	0.0187	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Hexachlorobutadiene	ND	0.0374	0.0747	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
2-Hexanone	ND	0.187	0.374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

GSI Water Solutions55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: ATI Acid Sump

Project Number: 0168

Project Manager: Renee Fowler

Report ID:

A1G0674 - 08 12 21 1344

## ANALYTICAL SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>98a6_15.9-16.4 (A1G0674-07)</b>				<b>Matrix: Soil</b>			<b>Batch: 1070843</b>	
Isopropylbenzene	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
4-Isopropyltoluene	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Methylene chloride	ND	0.187	0.374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
4-Methyl-2-pentanone (MiBK)	ND	0.187	0.374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Methyl tert-butyl ether (MTBE)	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Naphthalene	ND	0.0374	0.0747	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
n-Propylbenzene	ND	0.00934	0.0187	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Styrene	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
1,1,1,2-Tetrachloroethane	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
1,1,2,2-Tetrachloroethane	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Tetrachloroethene (PCE)	ND	0.00934	0.0187	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Toluene	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
1,2,3-Trichlorobenzene	ND	0.0934	0.187	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
1,2,4-Trichlorobenzene	ND	0.0934	0.187	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
1,1,1-Trichloroethane	ND	0.00934	0.0187	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
1,1,2-Trichloroethane	ND	0.00934	0.0187	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Trichloroethene (TCE)	ND	0.00934	0.0187	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Trichlorofluoromethane	ND	0.0374	0.0747	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
1,2,3-Trichloropropane	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
1,2,4-Trimethylbenzene	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
1,3,5-Trimethylbenzene	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
Vinyl chloride	ND	0.00934	0.0187	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
m,p-Xylene	ND	0.0187	0.0374	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
o-Xylene	ND	0.00934	0.0187	mg/kg wet	50	07/27/21 17:43	5035A/8260D	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery:</i>	<i>104 %</i>	<i>Limits:</i>	<i>80-120 %</i>	<i>I</i>	<i>07/27/21 17:43</i>	<i>5035A/8260D</i>
<i>Toluene-d8 (Surr)</i>			<i>103 %</i>		<i>80-120 %</i>	<i>I</i>	<i>07/27/21 17:43</i>	<i>5035A/8260D</i>
<i>4-Bromofluorobenzene (Surr)</i>			<i>100 %</i>		<i>79-120 %</i>	<i>I</i>	<i>07/27/21 17:43</i>	<i>5035A/8260D</i>

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

**GSI Water Solutions**

55 SW Yamhill St, Ste 300  
Portland, OR 97209

Project: **ATI Acid Sump**

Project Number: **0168**

Project Manager: **Renee Fowler**

**Report ID:**

**A1G0674 - 08 12 21 1344**

### ANALYTICAL SAMPLE RESULTS

#### **Total Metals by EPA 6020B (ICPMS)**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>GW-AS9-initial (A1G0674-08)</b>								<b>Matrix: Water</b>
Batch: 1070959								
Sodium	162	2.25	4.50	mg/L	5	07/29/21 18:10	EPA 6020B	

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## ANALYTICAL REPORT

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

**GSI Water Solutions**

55 SW Yamhill St, Ste 300  
Portland, OR 97209

Project: **ATI Acid Sump**

Project Number: **0168**

Project Manager: **Renee Fowler**

**Report ID:**

**A1G0674 - 08 12 21 1344**

### ANALYTICAL SAMPLE RESULTS

#### **Anions by Ion Chromatography**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>GW-AS9-initial (A1G0674-08RE1)</b>								<b>Matrix: Water</b>
Batch: 1070852								
Sulfate	318	5.00	10.0	mg/L	10	07/27/21 15:24	EPA 300.0	

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Philip Nerenberg, Lab Director

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## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

**GSI Water Solutions**55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: **ATI Acid Sump**Project Number: **0168**Project Manager: **Renee Fowler****Report ID:****A1G0674 - 08 12 21 1344****QUALITY CONTROL (QC) SAMPLE RESULTS****Volatile Organic Compounds by EPA 8260D**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 1070802 - EPA 5035A</b>												
<b>Soil</b>												
<b>Blank (1070802-BLK1)</b>												
Prepared: 07/26/21 09:00 Analyzed: 07/26/21 11:09												
<b>5035A/8260D</b>												
Acetone	ND	0.333	0.667	mg/kg wet	50	---	---	---	---	---	---	
Acrylonitrile	ND	0.0333	0.0667	mg/kg wet	50	---	---	---	---	---	---	
Benzene	ND	0.00333	0.00667	mg/kg wet	50	---	---	---	---	---	---	
Bromobenzene	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
Bromoform	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---	
Bromochloromethane	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---	
Bromodichloromethane	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---	
Bromomethane	ND	0.0667	0.0667	mg/kg wet	50	---	---	---	---	---	---	
2-Butanone (MEK)	ND	0.333	0.333	mg/kg wet	50	---	---	---	---	---	---	
n-Butylbenzene	ND	0.167	0.333	mg/kg wet	50	---	---	---	---	---	---	
sec-Butylbenzene	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---	
tert-Butylbenzene	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---	
Carbon disulfide	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---	
Carbon tetrachloride	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
Chlorobenzene	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
Chloroethane	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
Chloroform	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
Chloromethane	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
2-Chlorotoluene	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
4-Chlorotoluene	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
Dibromochloromethane	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
1,2-Dibromo-3-chloropropane	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
1,2-Dibromoethane (EDB)	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
Dibromomethane	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
Dichlorodifluoromethane	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
1,1-Dichloroethane	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
1,2-Dichloroethane (EDC)	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
1,1-Dichloroethene	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

GSI Water Solutions

55 SW Yamhill St, Ste 300  
Portland, OR 97209

Project: ATI Acid Sump

Project Number: 0168

Project Manager: Renee Fowler

Report ID:

A1G0674 - 08 12 21 1344

## QUALITY CONTROL (QC) SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD RPD Limit	Notes
<b>Batch 1070802 - EPA 5035A</b>											
<b>Soil</b>											
Blank (1070802-BLK1)											
1,2-Dichloropropane	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---
1,3-Dichloropropane	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
2,2-Dichloropropane	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
1,1-Dichloropropene	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
cis-1,3-Dichloropropene	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
trans-1,3-Dichloropropene	ND	0.0333	0.0667	mg/kg wet	50	---	---	---	---	---	---
Ethylbenzene	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---
Hexachlorobutadiene	ND	0.0333	0.0667	mg/kg wet	50	---	---	---	---	---	---
2-Hexanone	ND	0.167	0.333	mg/kg wet	50	---	---	---	---	---	---
Isopropylbenzene	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
4-Isopropyltoluene	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
Methylene chloride	ND	0.167	0.333	mg/kg wet	50	---	---	---	---	---	---
4-Methyl-2-pentanone (MiBK)	ND	0.167	0.333	mg/kg wet	50	---	---	---	---	---	---
Methyl tert-butyl ether (MTBE)	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
Naphthalene	ND	0.0333	0.0667	mg/kg wet	50	---	---	---	---	---	---
n-Propylbenzene	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---
Styrene	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
1,1,1,2-Tetrachloroethane	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
1,1,2,2-Tetrachloroethane	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
Tetrachloroethene (PCE)	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---
Toluene	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
1,2,3-Trichlorobenzene	ND	0.0833	0.167	mg/kg wet	50	---	---	---	---	---	---
1,2,4-Trichlorobenzene	ND	0.0833	0.167	mg/kg wet	50	---	---	---	---	---	---
1,1,1-Trichloroethane	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---
1,1,2-Trichloroethane	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---
Trichloroethene (TCE)	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---
Trichlorofluoromethane	ND	0.0667	0.0667	mg/kg wet	50	---	---	---	---	---	---
1,2,3-Trichloropropane	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
1,2,4-Trimethylbenzene	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
1,3,5-Trimethylbenzene	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
Vinyl chloride	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---
m,p-Xylene	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
o-Xylene	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---

Surr: 1,4-Difluorobenzene (Surr)

Recovery: 104 %

Limits: 80-120 %

Dilution: 1x

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

GSI Water Solutions55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: ATI Acid Sump

Project Number: 0168

Project Manager: Renee Fowler

Report ID:

A1G0674 - 08 12 21 1344

## QUALITY CONTROL (QC) SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 1070802 - EPA 5035A</b>												
<b>Blank (1070802-BLK1)</b>												
Prepared: 07/26/21 09:00 Analyzed: 07/26/21 11:09												
Surr: Toluene-d8 (Surr) Recovery: 106 % Limits: 80-120 % Dilution: Ix												
4-Bromoanisole (Surr) 97 % 79-120 % "												
<b>LCS (1070802-BS1)</b>												
Prepared: 07/26/21 09:00 Analyzed: 07/26/21 10:15												
<b>5035A/8260D</b>												
Acetone	1.78	0.500	1.00	mg/kg wet	50	2.00	---	89	80-120%	---	---	
Acrylonitrile	1.00	0.0500	0.100	mg/kg wet	50	1.00	---	100	80-120%	---	---	
Benzene	1.03	0.00500	0.0100	mg/kg wet	50	1.00	---	103	80-120%	---	---	
Bromobenzene	0.981	0.0125	0.0250	mg/kg wet	50	1.00	---	98	80-120%	---	---	
Bromochloromethane	1.07	0.0250	0.0500	mg/kg wet	50	1.00	---	107	80-120%	---	---	
Bromodichloromethane	0.807	0.0250	0.0500	mg/kg wet	50	1.00	---	81	80-120%	---	---	
Bromoform	0.760	0.100	0.100	mg/kg wet	50	1.00	---	76	<b>80-120%</b>	---	---	
Bromomethane	0.816	0.500	0.500	mg/kg wet	50	1.00	---	82	80-120%	---	---	
2-Butanone (MEK)	1.91	0.250	0.500	mg/kg wet	50	2.00	---	96	80-120%	---	---	
n-Butylbenzene	1.01	0.0250	0.0500	mg/kg wet	50	1.00	---	101	80-120%	---	---	
sec-Butylbenzene	0.979	0.0250	0.0500	mg/kg wet	50	1.00	---	98	80-120%	---	---	
tert-Butylbenzene	0.924	0.0250	0.0500	mg/kg wet	50	1.00	---	92	80-120%	---	---	
Carbon disulfide	0.723	0.500	0.500	mg/kg wet	50	1.00	---	72	<b>80-120%</b>	---	---	
Carbon tetrachloride	0.987	0.0250	0.0500	mg/kg wet	50	1.00	---	99	80-120%	---	---	
Chlorobenzene	1.00	0.0125	0.0250	mg/kg wet	50	1.00	---	100	80-120%	---	---	
Chloroethane	0.604	0.500	0.500	mg/kg wet	50	1.00	---	60	<b>80-120%</b>	---	---	
Chloroform	1.02	0.0250	0.0500	mg/kg wet	50	1.00	---	102	80-120%	---	---	
Chloromethane	1.25	0.125	0.250	mg/kg wet	50	1.00	---	125	<b>80-120%</b>	---	ICV-01, Q-55	
2-Chlorotoluene	1.00	0.0250	0.0500	mg/kg wet	50	1.00	---	100	80-120%	---	---	
4-Chlorotoluene	0.987	0.0250	0.0500	mg/kg wet	50	1.00	---	99	80-120%	---	---	
Dibromochloromethane	0.797	0.0500	0.100	mg/kg wet	50	1.00	---	80	80-120%	---	---	
1,2-Dibromo-3-chloropropane	0.810	0.125	0.250	mg/kg wet	50	1.00	---	81	80-120%	---	---	
1,2-Dibromoethane (EDB)	0.905	0.0250	0.0500	mg/kg wet	50	1.00	---	91	80-120%	---	---	
Dibromomethane	0.938	0.0250	0.0500	mg/kg wet	50	1.00	---	94	80-120%	---	---	
1,2-Dichlorobenzene	1.02	0.0125	0.0250	mg/kg wet	50	1.00	---	102	80-120%	---	---	
1,3-Dichlorobenzene	1.03	0.0125	0.0250	mg/kg wet	50	1.00	---	103	80-120%	---	---	
1,4-Dichlorobenzene	0.958	0.0125	0.0250	mg/kg wet	50	1.00	---	96	80-120%	---	---	
Dichlorodifluoromethane	1.39	0.0500	0.100	mg/kg wet	50	1.00	---	139	<b>80-120%</b>	---	ICV-01, Q-56	
1,1-Dichloroethane	0.979	0.0125	0.0250	mg/kg wet	50	1.00	---	98	80-120%	---	---	

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

**GSI Water Solutions**55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: **ATI Acid Sump**Project Number: **0168**Project Manager: **Renee Fowler****Report ID:****A1G0674 - 08 12 21 1344****QUALITY CONTROL (QC) SAMPLE RESULTS****Volatile Organic Compounds by EPA 8260D**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 1070802 - EPA 5035A</b>												
<b>Soil</b>												
<b>LCS (1070802-BS1)</b>												
Prepared: 07/26/21 09:00 Analyzed: 07/26/21 10:15												
1,2-Dichloroethane (EDC)	0.972	0.0125	0.0250	mg/kg wet	50	1.00	---	97	80-120%	---	---	
1,1-Dichloroethene	0.912	0.0125	0.0250	mg/kg wet	50	1.00	---	91	80-120%	---	---	
cis-1,2-Dichloroethene	1.04	0.0125	0.0250	mg/kg wet	50	1.00	---	104	80-120%	---	---	
trans-1,2-Dichloroethene	0.997	0.0125	0.0250	mg/kg wet	50	1.00	---	100	80-120%	---	---	
1,2-Dichloropropane	1.05	0.0125	0.0250	mg/kg wet	50	1.00	---	105	80-120%	---	---	
1,3-Dichloropropane	1.01	0.0250	0.0500	mg/kg wet	50	1.00	---	101	80-120%	---	---	
2,2-Dichloropropane	1.11	0.0250	0.0500	mg/kg wet	50	1.00	---	111	80-120%	---	---	
1,1-Dichloropropene	0.996	0.0250	0.0500	mg/kg wet	50	1.00	---	100	80-120%	---	---	
cis-1,3-Dichloropropene	0.940	0.0250	0.0500	mg/kg wet	50	1.00	---	94	80-120%	---	---	
trans-1,3-Dichloropropene	0.873	0.0500	0.100	mg/kg wet	50	1.00	---	87	80-120%	---	---	
Ethylbenzene	1.02	0.0125	0.0250	mg/kg wet	50	1.00	---	102	80-120%	---	---	
Hexachlorobutadiene	0.985	0.0500	0.100	mg/kg wet	50	1.00	---	98	80-120%	---	---	
2-Hexanone	1.88	0.250	0.500	mg/kg wet	50	2.00	---	94	80-120%	---	---	
Isopropylbenzene	0.983	0.0250	0.0500	mg/kg wet	50	1.00	---	98	80-120%	---	---	
4-Isopropyltoluene	0.992	0.0250	0.0500	mg/kg wet	50	1.00	---	99	80-120%	---	---	
Methylene chloride	0.999	0.250	0.500	mg/kg wet	50	1.00	---	100	80-120%	---	---	
4-Methyl-2-pentanone (MiBK)	1.89	0.250	0.500	mg/kg wet	50	2.00	---	94	80-120%	---	---	
Methyl tert-butyl ether (MTBE)	1.03	0.0250	0.0500	mg/kg wet	50	1.00	---	103	80-120%	---	---	
Naphthalene	0.918	0.0500	0.100	mg/kg wet	50	1.00	---	92	80-120%	---	---	
n-Propylbenzene	1.01	0.0125	0.0250	mg/kg wet	50	1.00	---	101	80-120%	---	---	
Styrene	0.799	0.0250	0.0500	mg/kg wet	50	1.00	---	80	80-120%	---	---	
1,1,1,2-Tetrachloroethane	0.850	0.0250	0.0500	mg/kg wet	50	1.00	---	85	80-120%	---	---	
1,1,2,2-Tetrachloroethane	1.00	0.0250	0.0500	mg/kg wet	50	1.00	---	100	80-120%	---	---	
Tetrachloroethene (PCE)	1.03	0.0125	0.0250	mg/kg wet	50	1.00	---	103	80-120%	---	---	
Toluene	0.986	0.0250	0.0500	mg/kg wet	50	1.00	---	99	80-120%	---	---	
1,2,3-Trichlorobenzene	1.05	0.125	0.250	mg/kg wet	50	1.00	---	105	80-120%	---	---	
1,2,4-Trichlorobenzene	0.981	0.125	0.250	mg/kg wet	50	1.00	---	98	80-120%	---	---	
1,1,1-Trichloroethane	0.955	0.0125	0.0250	mg/kg wet	50	1.00	---	96	80-120%	---	---	
1,1,2-Trichloroethane	0.990	0.0125	0.0250	mg/kg wet	50	1.00	---	99	80-120%	---	---	
Trichloroethene (TCE)	1.02	0.0125	0.0250	mg/kg wet	50	1.00	---	102	80-120%	---	---	
Trichlorofluoromethane	0.714	0.100	0.100	mg/kg wet	50	1.00	---	71	80-120%	---	---	
1,2,3-Trichloropropane	0.987	0.0250	0.0500	mg/kg wet	50	1.00	---	99	80-120%	---	---	
1,2,4-Trimethylbenzene	0.993	0.0250	0.0500	mg/kg wet	50	1.00	---	99	80-120%	---	---	
1,3,5-Trimethylbenzene	0.994	0.0250	0.0500	mg/kg wet	50	1.00	---	99	80-120%	---	---	

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Philip Nerenberg, Lab Director

Q-55



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

**GSI Water Solutions**55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: ATI Acid Sump

Project Number: 0168

Project Manager: Renee Fowler

Report ID:

A1G0674 - 08 12 21 1344

## QUALITY CONTROL (QC) SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 1070802 - EPA 5035A</b>												
<b>LCS (1070802-BS1)</b>												
Prepared: 07/26/21 09:00 Analyzed: 07/26/21 10:15												
Vinyl chloride	0.969	0.0125	0.0250	mg/kg wet	50	1.00	---	97	80-120%	---	---	
m,p-Xylene	2.01	0.0250	0.0500	mg/kg wet	50	2.00	---	100	80-120%	---	---	
o-Xylene	0.957	0.0125	0.0250	mg/kg wet	50	1.00	---	96	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)												
Recovery: 103 % Limits: 80-120 % Dilution: 1x												
Toluene-d8 (Surr) 105 % 80-120 % "												
4-Bromofluorobenzene (Surr) 95 % 79-120 % "												
<b>Duplicate (1070802-DUP1)</b>												
Prepared: 07/22/21 11:25 Analyzed: 07/26/21 19:41												
<b>OC Source Sample: 98A5 8.0-8.5 (A1G0674-01)</b>												
<b>5035A/8260D</b>												
Acetone	ND	0.402	0.804	mg/kg wet	50	---	ND	---	---	---	30%	
Acrylonitrile	ND	0.0402	0.0804	mg/kg wet	50	---	ND	---	---	---	30%	
Benzene	ND	0.00402	0.00804	mg/kg wet	50	---	ND	---	---	---	30%	
Bromobenzene	ND	0.0100	0.0201	mg/kg wet	50	---	ND	---	---	---	30%	
Bromoform	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
Bromochloromethane	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
Bromodichloromethane	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
Bromoform	ND	0.0804	0.0804	mg/kg wet	50	---	ND	---	---	---	30%	
Bromomethane	ND	0.402	0.402	mg/kg wet	50	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	0.201	0.402	mg/kg wet	50	---	ND	---	---	---	30%	
n-Butylbenzene	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
sec-Butylbenzene	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
tert-Butylbenzene	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
Carbon disulfide	ND	0.402	0.402	mg/kg wet	50	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
Chlorobenzene	ND	0.0100	0.0201	mg/kg wet	50	---	ND	---	---	---	30%	
Chloroethane	ND	0.402	0.402	mg/kg wet	50	---	ND	---	---	---	30%	
Chloroform	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
Chloromethane	ND	0.100	0.201	mg/kg wet	50	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
Dibromochloromethane	ND	0.0402	0.0804	mg/kg wet	50	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	0.100	0.201	mg/kg wet	50	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
Dibromomethane	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	

Apex Laboratories

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

**GSI Water Solutions**55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: ATI Acid Sump

Project Number: 0168

Project Manager: Renee Fowler

Report ID:

A1G0674 - 08 12 21 1344

## QUALITY CONTROL (QC) SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 1070802 - EPA 5035A</b>												
<b>Duplicate (1070802-DUP1)</b>												
Prepared: 07/22/21 11:25 Analyzed: 07/26/21 19:41												
<u>QC Source Sample: 98A5 8.0-8.5 (A1G0674-01)</u>												
1,2-Dichlorobenzene	ND	0.0100	0.0201	mg/kg wet	50	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	0.0100	0.0201	mg/kg wet	50	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	0.0100	0.0201	mg/kg wet	50	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	0.0402	0.0804	mg/kg wet	50	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	0.0100	0.0201	mg/kg wet	50	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	0.0100	0.0201	mg/kg wet	50	---	ND	---	---	---	30%	
1,1-Dichloroethene	<b>0.0254</b>	0.0100	0.0201	mg/kg wet	50	---	0.0130	---	---	<b>65</b>	<b>30%</b>	
cis-1,2-Dichloroethene	ND	0.0100	0.0201	mg/kg wet	50	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	0.0100	0.0201	mg/kg wet	50	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	0.0100	0.0201	mg/kg wet	50	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	0.0402	0.0804	mg/kg wet	50	---	ND	---	---	---	30%	
Ethylbenzene	ND	0.0100	0.0201	mg/kg wet	50	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	0.0402	0.0804	mg/kg wet	50	---	ND	---	---	---	30%	
2-Hexanone	ND	0.201	0.402	mg/kg wet	50	---	ND	---	---	---	30%	
Isopropylbenzene	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
4-Isopropyltoluene	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
Methylene chloride	ND	0.201	0.402	mg/kg wet	50	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	0.201	0.402	mg/kg wet	50	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
Naphthalene	ND	0.0402	0.0804	mg/kg wet	50	---	ND	---	---	---	30%	
n-Propylbenzene	ND	0.0100	0.0201	mg/kg wet	50	---	ND	---	---	---	30%	
Styrene	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	0.0100	0.0201	mg/kg wet	50	---	ND	---	---	---	30%	
Toluene	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	0.100	0.201	mg/kg wet	50	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	0.100	0.201	mg/kg wet	50	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	0.0100	0.0201	mg/kg wet	50	---	ND	---	---	---	30%	

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

GSI Water Solutions55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: ATI Acid Sump

Project Number: 0168

Report ID:

Project Manager: Renee Fowler

A1G0674 - 08 12 21 1344

## QUALITY CONTROL (QC) SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 1070802 - EPA 5035A</b>												
<b>Duplicate (1070802-DUP1)</b>												
Prepared: 07/22/21 11:25 Analyzed: 07/26/21 19:41												
<u>QC Source Sample: 98A5 8.0-8.5 (A1G0674-01)</u>												
1,1,2-Trichloroethane	ND	0.0100	0.0201	mg/kg wet	50	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	0.0100	0.0201	mg/kg wet	50	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	0.0804	0.0804	mg/kg wet	50	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
1,3,5-Trimethylbenzene	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
Vinyl chloride	ND	0.0100	0.0201	mg/kg wet	50	---	ND	---	---	---	30%	
m,p-Xylene	ND	0.0201	0.0402	mg/kg wet	50	---	ND	---	---	---	30%	
o-Xylene	ND	0.0100	0.0201	mg/kg wet	50	---	ND	---	---	---	30%	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 103 %</i>		<i>Limits: 80-120 %</i>			<i>Dilution: 1x</i>					
<i>Toluene-d8 (Surr)</i>		<i>103 %</i>		<i>80-120 %</i>			"					
<i>4-Bromofluorobenzene (Surr)</i>		<i>97 %</i>		<i>79-120 %</i>			"					
<b>Matrix Spike (1070802-MS1)</b>												
Prepared: 07/22/21 14:40 Analyzed: 07/26/21 21:29												
<u>QC Source Sample: 98a2 8.0-9.0 (A1G0674-05)</u>												
<u>5035A/8260D</u>												
Acetone	1.39	0.368	0.736	mg/kg wet	50	1.47	ND	94	36-164%	---	---	
Acrylonitrile	0.783	0.0368	0.0736	mg/kg wet	50	0.736	ND	106	65-134%	---	---	
Benzene	0.768	0.00368	0.00736	mg/kg wet	50	0.736	ND	104	77-121%	---	---	
Bromobenzene	0.744	0.00920	0.0184	mg/kg wet	50	0.736	ND	101	78-121%	---	---	
Bromochloromethane	0.825	0.0184	0.0368	mg/kg wet	50	0.736	ND	112	78-125%	---	---	
Bromodichloromethane	0.615	0.0184	0.0368	mg/kg wet	50	0.736	ND	84	75-127%	---	---	
Bromoform	0.559	0.0736	0.0736	mg/kg wet	50	0.736	ND	76	67-132%	---	---	
Bromomethane	0.660	0.368	0.368	mg/kg wet	50	0.736	ND	90	53-143%	---	---	
2-Butanone (MEK)	1.49	0.184	0.368	mg/kg wet	50	1.47	ND	101	51-148%	---	---	
n-Butylbenzene	0.721	0.0184	0.0368	mg/kg wet	50	0.736	ND	98	70-128%	---	---	
sec-Butylbenzene	0.721	0.0184	0.0368	mg/kg wet	50	0.736	ND	98	73-126%	---	---	
tert-Butylbenzene	0.687	0.0184	0.0368	mg/kg wet	50	0.736	ND	93	73-125%	---	---	
Carbon disulfide	0.538	0.368	0.368	mg/kg wet	50	0.736	ND	73	63-132%	---	---	
Carbon tetrachloride	0.755	0.0184	0.0368	mg/kg wet	50	0.736	ND	103	70-135%	---	---	
Chlorobenzene	0.749	0.00920	0.0184	mg/kg wet	50	0.736	ND	102	79-120%	---	---	
Chloroethane	0.564	0.368	0.368	mg/kg wet	50	0.736	ND	77	59-139%	---	---	
Chloroform	0.768	0.0184	0.0368	mg/kg wet	50	0.736	ND	104	78-123%	---	---	

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

GSI Water Solutions55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: ATI Acid Sump

Project Number: 0168

Project Manager: Renee Fowler

Report ID:

A1G0674 - 08 12 21 1344

## QUALITY CONTROL (QC) SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 1070802 - EPA 5035A</b>												
<b>Matrix Spike (1070802-MS1)</b>												
Prepared: 07/22/21 14:40 Analyzed: 07/26/21 21:29												
QC Source Sample: 98a2 8.0-9.0 (A1G0674-05)												
Chloromethane	0.951	0.0920	0.184	mg/kg wet	50	0.736	ND	129	50-136%	---	---	ICV-01, Q-54c
2-Chlorotoluene	0.756	0.0184	0.0368	mg/kg wet	50	0.736	ND	103	75-122%	---	---	
4-Chlorotoluene	0.745	0.0184	0.0368	mg/kg wet	50	0.736	ND	101	72-124%	---	---	
Dibromochloromethane	0.612	0.0368	0.0736	mg/kg wet	50	0.736	ND	83	74-126%	---	---	
1,2-Dibromo-3-chloropropane	0.613	0.0920	0.184	mg/kg wet	50	0.736	ND	83	61-132%	---	---	
1,2-Dibromoethane (EDB)	0.688	0.0184	0.0368	mg/kg wet	50	0.736	ND	93	78-122%	---	---	
Dibromomethane	0.698	0.0184	0.0368	mg/kg wet	50	0.736	ND	95	78-125%	---	---	
1,2-Dichlorobenzene	0.759	0.00920	0.0184	mg/kg wet	50	0.736	ND	103	78-121%	---	---	
1,3-Dichlorobenzene	0.752	0.00920	0.0184	mg/kg wet	50	0.736	ND	102	77-121%	---	---	
1,4-Dichlorobenzene	0.706	0.00920	0.0184	mg/kg wet	50	0.736	ND	96	75-120%	---	---	
Dichlorodifluoromethane	1.04	0.0368	0.0736	mg/kg wet	50	0.736	ND	141	29-149%	---	---	ICV-01, Q-54b
1,1-Dichloroethane	0.748	0.00920	0.0184	mg/kg wet	50	0.736	ND	102	76-125%	---	---	
1,2-Dichloroethane (EDC)	0.731	0.00920	0.0184	mg/kg wet	50	0.736	ND	99	73-128%	---	---	
1,1-Dichloroethene	0.694	0.00920	0.0184	mg/kg wet	50	0.736	ND	94	70-131%	---	---	
cis-1,2-Dichloroethene	0.784	0.00920	0.0184	mg/kg wet	50	0.736	ND	106	77-123%	---	---	
trans-1,2-Dichloroethene	0.765	0.00920	0.0184	mg/kg wet	50	0.736	ND	104	74-125%	---	---	
1,2-Dichloropropane	0.810	0.00920	0.0184	mg/kg wet	50	0.736	ND	110	76-123%	---	---	
1,3-Dichloropropane	0.757	0.0184	0.0368	mg/kg wet	50	0.736	ND	103	77-121%	---	---	
2,2-Dichloropropane	0.760	0.0184	0.0368	mg/kg wet	50	0.736	ND	103	67-133%	---	---	
1,1-Dichloropropene	0.744	0.0184	0.0368	mg/kg wet	50	0.736	ND	101	76-125%	---	---	
cis-1,3-Dichloropropene	0.688	0.0184	0.0368	mg/kg wet	50	0.736	ND	93	74-126%	---	---	
trans-1,3-Dichloropropene	0.645	0.0368	0.0736	mg/kg wet	50	0.736	ND	88	71-130%	---	---	
Ethylbenzene	0.749	0.00920	0.0184	mg/kg wet	50	0.736	ND	102	76-122%	---	---	
Hexachlorobutadiene	0.702	0.0368	0.0736	mg/kg wet	50	0.736	ND	95	61-135%	---	---	
2-Hexanone	1.41	0.184	0.368	mg/kg wet	50	1.47	ND	96	53-145%	---	---	
Isopropylbenzene	0.720	0.0184	0.0368	mg/kg wet	50	0.736	ND	98	68-134%	---	---	
4-Isopropyltoluene	0.721	0.0184	0.0368	mg/kg wet	50	0.736	ND	98	73-127%	---	---	
Methylene chloride	0.697	0.184	0.368	mg/kg wet	50	0.736	ND	95	70-128%	---	---	
4-Methyl-2-pentanone (MiBK)	1.41	0.184	0.368	mg/kg wet	50	1.47	ND	96	65-135%	---	---	
Methyl tert-butyl ether (MTBE)	0.768	0.0184	0.0368	mg/kg wet	50	0.736	ND	104	73-125%	---	---	
Naphthalene	0.634	0.0368	0.0736	mg/kg wet	50	0.736	ND	86	62-129%	---	---	
n-Propylbenzene	0.759	0.00920	0.0184	mg/kg wet	50	0.736	ND	103	73-125%	---	---	

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

GSI Water Solutions55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: ATI Acid Sump

Project Number: 0168

Report ID:

Project Manager: Renee Fowler

A1G0674 - 08 12 21 1344

## QUALITY CONTROL (QC) SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 1070802 - EPA 5035A</b>												
<b>Matrix Spike (1070802-MS1)</b>												
Prepared: 07/22/21 14:40 Analyzed: 07/26/21 21:29												
<u>QC Source Sample: 98a2 8.0-9.0 (A1G0674-05)</u>												
Styrene	0.600	0.0184	0.0368	mg/kg wet	50	0.736	ND	81	76-124%	---	---	
1,1,1,2-Tetrachloroethane	0.659	0.0184	0.0368	mg/kg wet	50	0.736	ND	89	78-125%	---	---	
1,1,2,2-Tetrachloroethane	0.750	0.0184	0.0368	mg/kg wet	50	0.736	ND	102	70-124%	---	---	
Tetrachloroethene (PCE)	0.746	0.00920	0.0184	mg/kg wet	50	0.736	ND	101	73-128%	---	---	
Toluene	0.733	0.0184	0.0368	mg/kg wet	50	0.736	ND	100	77-121%	---	---	
1,2,3-Trichlorobenzene	0.730	0.0920	0.184	mg/kg wet	50	0.736	ND	99	66-130%	---	---	
1,2,4-Trichlorobenzene	0.699	0.0920	0.184	mg/kg wet	50	0.736	ND	95	67-129%	---	---	
1,1,1-Trichloroethane	0.741	0.00920	0.0184	mg/kg wet	50	0.736	ND	101	73-130%	---	---	
1,1,2-Trichloroethane	0.747	0.00920	0.0184	mg/kg wet	50	0.736	ND	101	78-121%	---	---	
Trichloroethene (TCE)	0.761	0.00920	0.0184	mg/kg wet	50	0.736	ND	103	77-123%	---	---	
Trichlorofluoromethane	0.566	0.0736	0.0736	mg/kg wet	50	0.736	ND	77	62-140%	---	---	
1,2,3-Trichloropropane	0.741	0.0184	0.0368	mg/kg wet	50	0.736	ND	101	73-125%	---	---	
1,2,4-Trimethylbenzene	0.736	0.0184	0.0368	mg/kg wet	50	0.736	ND	100	75-123%	---	---	
1,3,5-Trimethylbenzene	0.739	0.0184	0.0368	mg/kg wet	50	0.736	ND	100	73-124%	---	---	
Vinyl chloride	0.729	0.00920	0.0184	mg/kg wet	50	0.736	ND	99	56-135%	---	---	
m,p-Xylene	1.48	0.0184	0.0368	mg/kg wet	50	1.47	ND	100	77-124%	---	---	
o-Xylene	0.707	0.00920	0.0184	mg/kg wet	50	0.736	ND	96	77-123%	---	---	
Surr: 1,4-Difluorobenzene (Surr)												
Recovery: 103 %												
Limits: 80-120 %												
Dilution: 1x												
Toluene-d8 (Surr)												
104 %												
80-120 %												
4-Bromofluorobenzene (Surr)												
97 %												
79-120 %												
"												

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

**GSI Water Solutions**55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: **ATI Acid Sump**Project Number: **0168**Project Manager: **Renee Fowler****Report ID:****A1G0674 - 08 12 21 1344****QUALITY CONTROL (QC) SAMPLE RESULTS****Volatile Organic Compounds by EPA 8260D**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 1070843 - EPA 5035A</b>												
<b>Soil</b>												
<b>Blank (1070843-BLK1)</b>												
Prepared: 07/27/21 09:00 Analyzed: 07/27/21 10:31												
<b>5035A/8260D</b>												
Acetone	ND	0.333	0.667	mg/kg wet	50	---	---	---	---	---	---	
Acrylonitrile	ND	0.0333	0.0667	mg/kg wet	50	---	---	---	---	---	---	
Benzene	ND	0.00333	0.00667	mg/kg wet	50	---	---	---	---	---	---	
Bromobenzene	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
Bromoform	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---	
Bromochloromethane	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---	
Bromodichloromethane	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---	
Bromomethane	ND	0.0667	0.0667	mg/kg wet	50	---	---	---	---	---	---	
Carbon disulfide	ND	0.333	0.333	mg/kg wet	50	---	---	---	---	---	---	
Carbon tetrachloride	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---	
Chlorobenzene	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
Chloroethane	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
Chloroform	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---	
Chloromethane	ND	0.0833	0.167	mg/kg wet	50	---	---	---	---	---	---	
2-Chlorotoluene	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---	
4-Chlorotoluene	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---	
Dibromochloromethane	ND	0.0333	0.0667	mg/kg wet	50	---	---	---	---	---	---	
1,2-Dibromo-3-chloropropane	ND	0.0833	0.167	mg/kg wet	50	---	---	---	---	---	---	
1,2-Dibromoethane (EDB)	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---	
Dibromomethane	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
Dichlorodifluoromethane	ND	0.0333	0.0667	mg/kg wet	50	---	---	---	---	---	---	
1,1-Dichloroethane	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
1,2-Dichloroethane (EDC)	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
1,1-Dichloroethene	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---	

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

**GSI Water Solutions**55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: **ATI Acid Sump**Project Number: **0168**Project Manager: **Renee Fowler****Report ID:****A1G0674 - 08 12 21 1344****QUALITY CONTROL (QC) SAMPLE RESULTS****Volatile Organic Compounds by EPA 8260D**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD RPD Limit	Notes
<b>Batch 1070843 - EPA 5035A</b>											
<b>Soil</b>											
<b>Blank (1070843-BLK1)</b>											
1,2-Dichloropropane	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---
1,3-Dichloropropane	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
2,2-Dichloropropane	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
1,1-Dichloropropene	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
cis-1,3-Dichloropropene	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
trans-1,3-Dichloropropene	ND	0.0333	0.0667	mg/kg wet	50	---	---	---	---	---	---
Ethylbenzene	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---
Hexachlorobutadiene	ND	0.0333	0.0667	mg/kg wet	50	---	---	---	---	---	---
2-Hexanone	ND	0.167	0.333	mg/kg wet	50	---	---	---	---	---	---
Isopropylbenzene	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
4-Isopropyltoluene	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
Methylene chloride	ND	0.167	0.333	mg/kg wet	50	---	---	---	---	---	---
4-Methyl-2-pentanone (MiBK)	ND	0.167	0.333	mg/kg wet	50	---	---	---	---	---	---
Methyl tert-butyl ether (MTBE)	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
Naphthalene	ND	0.0333	0.0667	mg/kg wet	50	---	---	---	---	---	---
n-Propylbenzene	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---
Styrene	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
1,1,1,2-Tetrachloroethane	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
1,1,2,2-Tetrachloroethane	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
Tetrachloroethene (PCE)	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---
Toluene	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
1,2,3-Trichlorobenzene	ND	0.0833	0.167	mg/kg wet	50	---	---	---	---	---	---
1,2,4-Trichlorobenzene	ND	0.0833	0.167	mg/kg wet	50	---	---	---	---	---	---
1,1,1-Trichloroethane	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---
1,1,2-Trichloroethane	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---
Trichloroethene (TCE)	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---
Trichlorofluoromethane	ND	0.0333	0.0667	mg/kg wet	50	---	---	---	---	---	---
1,2,3-Trichloropropane	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
1,2,4-Trimethylbenzene	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
1,3,5-Trimethylbenzene	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
Vinyl chloride	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---
m,p-Xylene	ND	0.0167	0.0333	mg/kg wet	50	---	---	---	---	---	---
o-Xylene	ND	0.00833	0.0167	mg/kg wet	50	---	---	---	---	---	---

Surr: 1,4-Difluorobenzene (Surr)

Recovery: 103 %

Limits: 80-120 %

Dilution: 1x

Apex Laboratories

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

GSI Water Solutions55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: ATI Acid Sump

Project Number: 0168

Project Manager: Renee Fowler

Report ID:

A1G0674 - 08 12 21 1344

## QUALITY CONTROL (QC) SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 1070843 - EPA 5035A</b>												
<b>Blank (1070843-BLK1)</b>												
Prepared: 07/27/21 09:00 Analyzed: 07/27/21 10:31												
Surr: Toluene-d8 (Surr) Recovery: 106 % Limits: 80-120 % Dilution: Ix												
4-Bromoanisole (Surr) 96 % 79-120 % "												
<b>LCS (1070843-BS1)</b>												
Prepared: 07/27/21 09:00 Analyzed: 07/27/21 09:38												
<b>5035A/8260D</b>												
Acetone	1.84	0.500	1.00	mg/kg wet	50	2.00	---	92	80-120%	---	---	
Acrylonitrile	1.05	0.0500	0.100	mg/kg wet	50	1.00	---	105	80-120%	---	---	
Benzene	1.05	0.00500	0.0100	mg/kg wet	50	1.00	---	105	80-120%	---	---	
Bromobenzene	0.982	0.0125	0.0250	mg/kg wet	50	1.00	---	98	80-120%	---	---	
Bromochloromethane	1.11	0.0250	0.0500	mg/kg wet	50	1.00	---	111	80-120%	---	---	
Bromodichloromethane	0.846	0.0250	0.0500	mg/kg wet	50	1.00	---	85	80-120%	---	---	
Bromoform	0.788	0.100	0.100	mg/kg wet	50	1.00	---	79	<b>80-120%</b>	---	---	
Bromomethane	0.754	0.500	0.500	mg/kg wet	50	1.00	---	75	<b>80-120%</b>	---	Q-55	
2-Butanone (MEK)	1.99	0.250	0.500	mg/kg wet	50	2.00	---	99	80-120%	---	---	
n-Butylbenzene	1.03	0.0250	0.0500	mg/kg wet	50	1.00	---	103	80-120%	---	---	
sec-Butylbenzene	1.02	0.0250	0.0500	mg/kg wet	50	1.00	---	102	80-120%	---	---	
tert-Butylbenzene	0.951	0.0250	0.0500	mg/kg wet	50	1.00	---	95	80-120%	---	---	
Carbon disulfide	0.743	0.500	0.500	mg/kg wet	50	1.00	---	74	<b>80-120%</b>	---	Q-55	
Carbon tetrachloride	1.05	0.0250	0.0500	mg/kg wet	50	1.00	---	105	80-120%	---	---	
Chlorobenzene	1.02	0.0125	0.0250	mg/kg wet	50	1.00	---	102	80-120%	---	---	
Chloroethane	0.693	0.500	0.500	mg/kg wet	50	1.00	---	69	<b>80-120%</b>	---	Q-55	
Chloroform	1.05	0.0250	0.0500	mg/kg wet	50	1.00	---	105	80-120%	---	---	
Chloromethane	1.30	0.125	0.250	mg/kg wet	50	1.00	---	130	<b>80-120%</b>	---	Q-56	
2-Chlorotoluene	1.01	0.0250	0.0500	mg/kg wet	50	1.00	---	101	80-120%	---	---	
4-Chlorotoluene	1.02	0.0250	0.0500	mg/kg wet	50	1.00	---	102	80-120%	---	---	
Dibromochloromethane	0.841	0.0500	0.100	mg/kg wet	50	1.00	---	84	80-120%	---	---	
1,2-Dibromo-3-chloropropane	0.798	0.125	0.250	mg/kg wet	50	1.00	---	80	80-120%	---	---	
1,2-Dibromoethane (EDB)	0.947	0.0250	0.0500	mg/kg wet	50	1.00	---	95	80-120%	---	---	
Dibromomethane	0.955	0.0250	0.0500	mg/kg wet	50	1.00	---	95	80-120%	---	---	
1,2-Dichlorobenzene	1.05	0.0125	0.0250	mg/kg wet	50	1.00	---	105	80-120%	---	---	
1,3-Dichlorobenzene	1.03	0.0125	0.0250	mg/kg wet	50	1.00	---	103	80-120%	---	---	
1,4-Dichlorobenzene	0.965	0.0125	0.0250	mg/kg wet	50	1.00	---	97	80-120%	---	---	
Dichlorodifluoromethane	1.37	0.0500	0.100	mg/kg wet	50	1.00	---	137	<b>80-120%</b>	---	Q-56	
1,1-Dichloroethane	1.03	0.0125	0.0250	mg/kg wet	50	1.00	---	103	80-120%	---	---	

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

**GSI Water Solutions**55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: **ATI Acid Sump**Project Number: **0168**Project Manager: **Renee Fowler****Report ID:****A1G0674 - 08 12 21 1344****QUALITY CONTROL (QC) SAMPLE RESULTS****Volatile Organic Compounds by EPA 8260D**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 1070843 - EPA 5035A</b>												
<b>Soil</b>												
Prepared: 07/27/21 09:00 Analyzed: 07/27/21 09:38												
LCS (1070843-BS1)												
1,2-Dichloroethane (EDC)	0.999	0.0125	0.0250	mg/kg wet	50	1.00	---	100	80-120%	---	---	
1,1-Dichloroethene	0.938	0.0125	0.0250	mg/kg wet	50	1.00	---	94	80-120%	---	---	
cis-1,2-Dichloroethene	1.07	0.0125	0.0250	mg/kg wet	50	1.00	---	107	80-120%	---	---	
trans-1,2-Dichloroethene	1.05	0.0125	0.0250	mg/kg wet	50	1.00	---	105	80-120%	---	---	
1,2-Dichloropropane	1.10	0.0125	0.0250	mg/kg wet	50	1.00	---	110	80-120%	---	---	
1,3-Dichloropropane	1.04	0.0250	0.0500	mg/kg wet	50	1.00	---	104	80-120%	---	---	
2,2-Dichloropropane	1.15	0.0250	0.0500	mg/kg wet	50	1.00	---	115	80-120%	---	---	
1,1-Dichloropropene	1.03	0.0250	0.0500	mg/kg wet	50	1.00	---	103	80-120%	---	---	
cis-1,3-Dichloropropene	0.979	0.0250	0.0500	mg/kg wet	50	1.00	---	98	80-120%	---	---	
trans-1,3-Dichloropropene	0.910	0.0500	0.100	mg/kg wet	50	1.00	---	91	80-120%	---	---	
Ethylbenzene	1.04	0.0125	0.0250	mg/kg wet	50	1.00	---	104	80-120%	---	---	
Hexachlorobutadiene	0.989	0.0500	0.100	mg/kg wet	50	1.00	---	99	80-120%	---	---	
2-Hexanone	1.94	0.250	0.500	mg/kg wet	50	2.00	---	97	80-120%	---	---	
Isopropylbenzene	0.985	0.0250	0.0500	mg/kg wet	50	1.00	---	99	80-120%	---	---	
4-Isopropyltoluene	1.01	0.0250	0.0500	mg/kg wet	50	1.00	---	101	80-120%	---	---	
Methylene chloride	1.07	0.250	0.500	mg/kg wet	50	1.00	---	107	80-120%	---	---	
4-Methyl-2-pentanone (MiBK)	1.93	0.250	0.500	mg/kg wet	50	2.00	---	96	80-120%	---	---	
Methyl tert-butyl ether (MTBE)	1.04	0.0250	0.0500	mg/kg wet	50	1.00	---	104	80-120%	---	---	
Naphthalene	0.876	0.0500	0.100	mg/kg wet	50	1.00	---	88	80-120%	---	---	
n-Propylbenzene	1.03	0.0125	0.0250	mg/kg wet	50	1.00	---	103	80-120%	---	---	
Styrene	0.800	0.0250	0.0500	mg/kg wet	50	1.00	---	80	80-120%	---	---	
1,1,1,2-Tetrachloroethane	0.895	0.0250	0.0500	mg/kg wet	50	1.00	---	89	80-120%	---	---	
1,1,2,2-Tetrachloroethane	1.02	0.0250	0.0500	mg/kg wet	50	1.00	---	102	80-120%	---	---	
Tetrachloroethene (PCE)	1.05	0.0125	0.0250	mg/kg wet	50	1.00	---	105	80-120%	---	---	
Toluene	1.01	0.0250	0.0500	mg/kg wet	50	1.00	---	101	80-120%	---	---	
1,2,3-Trichlorobenzene	1.03	0.125	0.250	mg/kg wet	50	1.00	---	103	80-120%	---	---	
1,2,4-Trichlorobenzene	0.976	0.125	0.250	mg/kg wet	50	1.00	---	98	80-120%	---	---	
1,1,1-Trichloroethane	1.02	0.0125	0.0250	mg/kg wet	50	1.00	---	102	80-120%	---	---	
1,1,2-Trichloroethane	0.994	0.0125	0.0250	mg/kg wet	50	1.00	---	99	80-120%	---	---	
Trichloroethene (TCE)	1.04	0.0125	0.0250	mg/kg wet	50	1.00	---	104	80-120%	---	---	
Trichlorofluoromethane	0.822	0.0500	0.100	mg/kg wet	50	1.00	---	82	80-120%	---	---	
1,2,3-Trichloropropane	1.02	0.0250	0.0500	mg/kg wet	50	1.00	---	102	80-120%	---	---	
1,2,4-Trimethylbenzene	1.01	0.0250	0.0500	mg/kg wet	50	1.00	---	101	80-120%	---	---	
1,3,5-Trimethylbenzene	1.01	0.0250	0.0500	mg/kg wet	50	1.00	---	101	80-120%	---	---	

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

GSI Water Solutions

55 SW Yamhill St, Ste 300  
Portland, OR 97209

Project: ATI Acid Sump

Project Number: 0168

Project Manager: Renee Fowler

Report ID:

A1G0674 - 08 12 21 1344

## QUALITY CONTROL (QC) SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 1070843 - EPA 5035A</b>												
<b>LCS (1070843-BS1)</b>												
Prepared: 07/27/21 09:00 Analyzed: 07/27/21 09:38												
Vinyl chloride	1.00	0.0125	0.0250	mg/kg wet	50	1.00	---	100	80-120%	---	---	
m,p-Xylene	2.03	0.0250	0.0500	mg/kg wet	50	2.00	---	102	80-120%	---	---	
o-Xylene	0.966	0.0125	0.0250	mg/kg wet	50	1.00	---	97	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)												
Recovery: 103 % Limits: 80-120 % Dilution: 1x												
Toluene-d8 (Surr) 106 % 80-120 % "												
4-Bromofluorobenzene (Surr) 94 % 79-120 % "												
<b>Duplicate (1070843-DUP1)</b>												
Prepared: 07/22/21 16:00 Analyzed: 07/27/21 13:40												
<b>OC Source Sample: Non-SDG (A1G0671-12)</b>												
Acetone	ND	0.501	1.00	mg/kg dry	50	---	ND	---	---	---	30%	
Acrylonitrile	<b>1.01</b>	1.01	1.01	mg/kg dry	50	---	ND	---	---	---	30%	
Benzene	ND	0.0250	0.0250	mg/kg dry	50	---	ND	---	---	---	30%	
Bromobenzene	ND	0.0125	0.0250	mg/kg dry	50	---	ND	---	---	---	30%	
Bromochloromethane	ND	0.0250	0.0501	mg/kg dry	50	---	ND	---	---	---	30%	
Bromodichloromethane	ND	0.476	0.476	mg/kg dry	50	---	ND	---	---	---	30%	
Bromoform	ND	0.100	0.100	mg/kg dry	50	---	ND	---	---	---	30%	
Bromomethane	ND	0.501	0.501	mg/kg dry	50	---	ND	---	---	---	30%	
2-Butanone (MEK)	<b>7.81</b>	0.250	0.501	mg/kg dry	50	---	ND	---	---	---	30% Q-04	
n-Butylbenzene	<b>7.52</b>	0.0250	0.0501	mg/kg dry	50	---	ND	---	---	---	30% M-02, Q-04	
sec-Butylbenzene	<b>1.91</b>	0.0250	0.0501	mg/kg dry	50	---	ND	---	---	---	30% Q-04	
tert-Butylbenzene	ND	0.0250	0.0501	mg/kg dry	50	---	ND	---	---	---	30%	
Carbon disulfide	ND	0.501	0.501	mg/kg dry	50	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	0.0250	0.0501	mg/kg dry	50	---	ND	---	---	---	30%	
Chlorobenzene	ND	0.0626	0.0626	mg/kg dry	50	---	ND	---	---	---	30% R-02	
Chloroethane	ND	0.501	0.501	mg/kg dry	50	---	ND	---	---	---	30%	
Chloroform	ND	0.138	0.138	mg/kg dry	50	---	ND	---	---	---	30% R-02	
Chloromethane	ND	0.125	0.250	mg/kg dry	50	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	0.0250	0.0501	mg/kg dry	50	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	0.0250	0.0501	mg/kg dry	50	---	ND	---	---	---	30%	
Dibromochloromethane	ND	0.0501	0.100	mg/kg dry	50	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	0.125	0.250	mg/kg dry	50	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	0.0250	0.0501	mg/kg dry	50	---	ND	---	---	---	30%	
Dibromomethane	ND	0.0250	0.0501	mg/kg dry	50	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	0.0125	0.0250	mg/kg dry	50	---	ND	---	---	---	30%	

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

**GSI Water Solutions**55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: **ATI Acid Sump**Project Number: **0168**Project Manager: **Renee Fowler****Report ID:****A1G0674 - 08 12 21 1344****QUALITY CONTROL (QC) SAMPLE RESULTS****Volatile Organic Compounds by EPA 8260D**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 1070843 - EPA 5035A</b>												
<b>Duplicate (1070843-DUP1)</b>												
Prepared: 07/22/21 16:00 Analyzed: 07/27/21 13:40												
<b>QC Source Sample: Non-SDG (A1G0671-12)</b>												
1,3-Dichlorobenzene	ND	0.0125	0.0250	mg/kg dry	50	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	0.0125	0.0250	mg/kg dry	50	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	0.0501	0.100	mg/kg dry	50	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	0.0501	0.0501	mg/kg dry	50	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	0.0125	0.0250	mg/kg dry	50	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	0.0125	0.0250	mg/kg dry	50	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	0.0125	0.0250	mg/kg dry	50	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	0.0125	0.0250	mg/kg dry	50	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	0.0125	0.0250	mg/kg dry	50	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	0.0250	0.0501	mg/kg dry	50	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	0.0250	0.0501	mg/kg dry	50	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	0.0250	0.0501	mg/kg dry	50	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	0.0250	0.0501	mg/kg dry	50	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	0.0501	0.100	mg/kg dry	50	---	ND	---	---	---	30%	
Ethylbenzene	<b>2.37</b>	0.0125	0.0250	mg/kg dry	50	---	0.0187	---	---	<b>197</b>	<b>30%</b>	
Hexachlorobutadiene	ND	0.0501	0.100	mg/kg dry	50	---	ND	---	---	---	30%	
2-Hexanone	ND	1.65	1.65	mg/kg dry	50	---	ND	---	---	---	30%	
Isopropylbenzene	<b>2.84</b>	0.0250	0.0501	mg/kg dry	50	---	ND	---	---	<b>30%</b>	Q-04	
4-Isopropyltoluene	<b>0.784</b>	0.0250	0.0501	mg/kg dry	50	---	ND	---	---	<b>30%</b>	M-02, Q-04	
Methylene chloride	ND	0.250	0.501	mg/kg dry	50	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	4.02	4.02	mg/kg dry	50	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	0.0250	0.0501	mg/kg dry	50	---	ND	---	---	---	30%	
Naphthalene	<b>7.31</b>	0.0501	0.100	mg/kg dry	50	---	0.0837	---	---	<b>195</b>	<b>30%</b>	
n-Propylbenzene	<b>15.5</b>	0.0125	0.0250	mg/kg dry	50	---	0.0682	---	---	<b>198</b>	<b>30%</b>	
Styrene	ND	0.0250	0.0501	mg/kg dry	50	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	0.0250	0.0501	mg/kg dry	50	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	0.388	0.388	mg/kg dry	50	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	0.0125	0.0250	mg/kg dry	50	---	ND	---	---	---	30%	
Toluene	ND	0.0501	0.0501	mg/kg dry	50	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	0.125	0.250	mg/kg dry	50	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	0.125	0.250	mg/kg dry	50	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	0.0125	0.0250	mg/kg dry	50	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	0.0125	0.0250	mg/kg dry	50	---	ND	---	---	---	30%	

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

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503-718-2323

ORELAP ID: OR100062

GSI Water Solutions55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: ATI Acid Sump

Project Number: 0168

Project Manager: Renee Fowler

Report ID:

A1G0674 - 08 12 21 1344

## QUALITY CONTROL (QC) SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 1070843 - EPA 5035A</b>												
<b>Duplicate (1070843-DUP1)</b>												
Prepared: 07/22/21 16:00 Analyzed: 07/27/21 13:40												
<u>QC Source Sample: Non-SDG (A1G0671-12)</u>												
Trichloroethene (TCE)	ND	0.0125	0.0250	mg/kg dry	50	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	0.0501	0.100	mg/kg dry	50	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	0.301	0.301	mg/kg dry	50	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	<b>66.9</b>	0.0250	0.0501	mg/kg dry	50	---	0.338	---	---	<b>198</b>	<b>30%</b>	
1,3,5-Trimethylbenzene	<b>27.0</b>	0.0250	0.0501	mg/kg dry	50	---	0.117	---	---	<b>198</b>	<b>30%</b>	
Vinyl chloride	ND	0.0125	0.0250	mg/kg dry	50	---	ND	---	---	---	30%	
m,p-Xylene	<b>11.3</b>	0.0250	0.0501	mg/kg dry	50	---	0.0958	---	---	<b>197</b>	<b>30%</b>	
o-Xylene	<b>1.03</b>	0.0125	0.0250	mg/kg dry	50	---	ND	---	---	---	<b>30%</b>	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 106 %</i>		<i>Limits: 80-120 %</i>			<i>Dilution: Ix</i>					
<i>Toluene-d8 (Surr)</i>				<i>107 %</i>			<i>80-120 %</i>				"	
<i>4-Bromofluorobenzene (Surr)</i>				<i>94 %</i>			<i>79-120 %</i>				"	

## Matrix Spike (1070843-MS1)

Prepared: 07/22/21 16:30 Analyzed: 07/27/21 15:28

<u>QC Source Sample: Non-SDG (A1G0671-14)</u>											
<u>5035A/8260D</u>											
Acetone	1.89	0.521	1.04	mg/kg dry	50	2.09	ND	91	36-164%	---	---
Acrylonitrile	1.10	0.0521	0.104	mg/kg dry	50	1.04	ND	106	65-134%	---	---
Benzene	1.09	0.00521	0.0104	mg/kg dry	50	1.04	ND	104	77-121%	---	---
Bromobenzene	1.04	0.0130	0.0260	mg/kg dry	50	1.04	ND	100	78-121%	---	---
Bromochloromethane	1.13	0.0260	0.0521	mg/kg dry	50	1.04	ND	108	78-125%	---	---
Bromodichloromethane	0.893	0.0260	0.0521	mg/kg dry	50	1.04	ND	86	75-127%	---	---
Bromoform	0.837	0.104	0.104	mg/kg dry	50	1.04	ND	80	67-132%	---	---
Bromomethane	0.861	0.521	0.521	mg/kg dry	50	1.04	ND	82	53-143%	---	Q-54h
2-Butanone (MEK)	2.11	0.260	0.521	mg/kg dry	50	2.09	ND	101	51-148%	---	---
n-Butylbenzene	1.09	0.0260	0.0521	mg/kg dry	50	1.04	ND	104	70-128%	---	---
sec-Butylbenzene	1.04	0.0260	0.0521	mg/kg dry	50	1.04	ND	99	73-126%	---	---
tert-Butylbenzene	0.988	0.0260	0.0521	mg/kg dry	50	1.04	ND	95	73-125%	---	---
Carbon disulfide	0.789	0.521	0.521	mg/kg dry	50	1.04	ND	76	63-132%	---	Q-54i
Carbon tetrachloride	1.11	0.0260	0.0521	mg/kg dry	50	1.04	ND	106	70-135%	---	---
Chlorobenzene	1.07	0.0130	0.0260	mg/kg dry	50	1.04	ND	102	79-120%	---	---
Chloroethane	0.787	0.521	0.521	mg/kg dry	50	1.04	ND	75	59-139%	---	Q-54e
Chloroform	1.09	0.0260	0.0521	mg/kg dry	50	1.04	ND	104	78-123%	---	---
Chloromethane	1.32	0.130	0.260	mg/kg dry	50	1.04	ND	127	50-136%	---	Q-54

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

**GSI Water Solutions**55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: ATI Acid Sump

Project Number: 0168

Report ID:

Project Manager: Renee Fowler

A1G0674 - 08 12 21 1344

## QUALITY CONTROL (QC) SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 1070843 - EPA 5035A</b>												
<b>Matrix Spike (1070843-MS1)</b>												
Prepared: 07/22/21 16:30 Analyzed: 07/27/21 15:28												
<b>QC Source Sample: Non-SDG (A1G0671-14)</b>												
2-Chlorotoluene	1.08	0.0260	0.0521	mg/kg dry	50	1.04	ND	103	75-122%	---	---	
4-Chlorotoluene	1.04	0.0260	0.0521	mg/kg dry	50	1.04	ND	100	72-124%	---	---	
Dibromochloromethane	0.897	0.0521	0.104	mg/kg dry	50	1.04	ND	86	74-126%	---	---	
1,2-Dibromo-3-chloropropane	0.864	0.130	0.260	mg/kg dry	50	1.04	ND	83	61-132%	---	---	
1,2-Dibromoethane (EDB)	0.990	0.0260	0.0521	mg/kg dry	50	1.04	ND	95	78-122%	---	---	
Dibromomethane	0.994	0.0260	0.0521	mg/kg dry	50	1.04	ND	95	78-125%	---	---	
1,2-Dichlorobenzene	1.09	0.0130	0.0260	mg/kg dry	50	1.04	ND	105	78-121%	---	---	
1,3-Dichlorobenzene	1.08	0.0130	0.0260	mg/kg dry	50	1.04	ND	103	77-121%	---	---	
1,4-Dichlorobenzene	0.999	0.0130	0.0260	mg/kg dry	50	1.04	ND	96	75-120%	---	---	
Dichlorodifluoromethane	1.37	0.0521	0.104	mg/kg dry	50	1.04	ND	131	29-149%	---	---	
1,1-Dichloroethane	1.05	0.0130	0.0260	mg/kg dry	50	1.04	ND	101	76-125%	---	---	
1,2-Dichloroethane (EDC)	1.03	0.0130	0.0260	mg/kg dry	50	1.04	ND	98	73-128%	---	---	
1,1-Dichloroethene	0.970	0.0130	0.0260	mg/kg dry	50	1.04	ND	93	70-131%	---	---	
cis-1,2-Dichloroethene	1.11	0.0130	0.0260	mg/kg dry	50	1.04	ND	107	77-123%	---	---	
trans-1,2-Dichloroethene	1.08	0.0130	0.0260	mg/kg dry	50	1.04	ND	103	74-125%	---	---	
1,2-Dichloropropane	1.13	0.0130	0.0260	mg/kg dry	50	1.04	ND	109	76-123%	---	---	
1,3-Dichloropropane	1.09	0.0260	0.0521	mg/kg dry	50	1.04	ND	104	77-121%	---	---	
2,2-Dichloropropane	1.10	0.0260	0.0521	mg/kg dry	50	1.04	ND	106	67-133%	---	---	
1,1-Dichloropropene	1.06	0.0260	0.0521	mg/kg dry	50	1.04	ND	101	76-125%	---	---	
cis-1,3-Dichloropropene	1.01	0.0260	0.0521	mg/kg dry	50	1.04	ND	97	74-126%	---	---	
trans-1,3-Dichloropropene	0.945	0.0521	0.104	mg/kg dry	50	1.04	ND	90	71-130%	---	---	
Ethylbenzene	1.08	0.0130	0.0260	mg/kg dry	50	1.04	ND	104	76-122%	---	---	
Hexachlorobutadiene	1.07	0.0521	0.104	mg/kg dry	50	1.04	ND	102	61-135%	---	---	
2-Hexanone	2.04	0.260	0.521	mg/kg dry	50	2.09	ND	97	53-145%	---	---	
Isopropylbenzene	1.04	0.0260	0.0521	mg/kg dry	50	1.04	ND	100	68-134%	---	---	
4-Isopropyltoluene	1.05	0.0260	0.0521	mg/kg dry	50	1.04	ND	101	73-127%	---	---	
Methylene chloride	1.01	0.260	0.521	mg/kg dry	50	1.04	ND	97	70-128%	---	---	
4-Methyl-2-pentanone (MiBK)	2.02	0.260	0.521	mg/kg dry	50	2.09	ND	97	65-135%	---	---	
Methyl tert-butyl ether (MTBE)	1.10	0.0260	0.0521	mg/kg dry	50	1.04	ND	105	73-125%	---	---	
Naphthalene	1.02	0.0521	0.104	mg/kg dry	50	1.04	ND	98	62-129%	---	---	
n-Propylbenzene	1.06	0.0130	0.0260	mg/kg dry	50	1.04	ND	100	73-125%	---	---	
Styrene	0.854	0.0260	0.0521	mg/kg dry	50	1.04	ND	82	76-124%	---	---	
1,1,2-Tetrachloroethane	0.957	0.0260	0.0521	mg/kg dry	50	1.04	ND	92	78-125%	---	---	

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

GSI Water Solutions55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: ATI Acid Sump

Project Number: 0168

Project Manager: Renee Fowler

Report ID:

A1G0674 - 08 12 21 1344

## QUALITY CONTROL (QC) SAMPLE RESULTS

## Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD RPD Limit	Notes
<b>Batch 1070843 - EPA 5035A</b>											
<b>Matrix Spike (1070843-MS1)</b>											
Prepared: 07/22/21 16:30 Analyzed: 07/27/21 15:28											
<u>QC Source Sample: Non-SDG (A1G0671-14)</u>											
1,1,2,2-Tetrachloroethane	1.05	0.0260	0.0521	mg/kg dry	50	1.04	ND	101	70-124%	---	---
Tetrachloroethene (PCE)	1.06	0.0130	0.0260	mg/kg dry	50	1.04	ND	102	73-128%	---	---
Toluene	1.03	0.0260	0.0521	mg/kg dry	50	1.04	ND	99	77-121%	---	---
1,2,3-Trichlorobenzene	1.07	0.130	0.260	mg/kg dry	50	1.04	ND	103	66-130%	---	---
1,2,4-Trichlorobenzene	1.04	0.130	0.260	mg/kg dry	50	1.04	ND	100	67-129%	---	---
1,1,1-Trichloroethane	1.05	0.0130	0.0260	mg/kg dry	50	1.04	ND	101	73-130%	---	---
1,1,2-Trichloroethane	1.05	0.0130	0.0260	mg/kg dry	50	1.04	ND	101	78-121%	---	---
Trichloroethylene (TCE)	1.07	0.0130	0.0260	mg/kg dry	50	1.04	ND	102	77-123%	---	---
Trichlorofluoromethane	0.793	0.0521	0.104	mg/kg dry	50	1.04	ND	76	62-140%	---	---
1,2,3-Trichloropropane	1.06	0.0260	0.0521	mg/kg dry	50	1.04	ND	101	73-125%	---	---
1,2,4-Trimethylbenzene	1.12	0.0260	0.0521	mg/kg dry	50	1.04	ND	100	75-123%	---	---
1,3,5-Trimethylbenzene	1.07	0.0260	0.0521	mg/kg dry	50	1.04	ND	99	73-124%	---	---
Vinyl chloride	1.03	0.0130	0.0260	mg/kg dry	50	1.04	ND	99	56-135%	---	---
m,p-Xylene	2.11	0.0260	0.0521	mg/kg dry	50	2.09	ND	101	77-124%	---	---
o-Xylene	1.04	0.0130	0.0260	mg/kg dry	50	1.04	ND	98	77-123%	---	---
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 104 %</i>		<i>Limits: 80-120 %</i>			<i>Dilution: 1x</i>				
<i>Toluene-d8 (Surr)</i>		<i>103 %</i>		<i>80-120 %</i>			"				
<i>4-Bromo fluorobenzene (Surr)</i>		<i>96 %</i>		<i>79-120 %</i>			"				

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Portland, OR 97209Project: ATI Acid Sump

Project Number: 0168

Report ID:

Project Manager: Renee Fowler

A1G0674 - 08 12 21 1344

## QUALITY CONTROL (QC) SAMPLE RESULTS

## Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 1070959 - EPA 3015A</b>												
<b>Blank (1070959-BLK1)</b>												
<u>EPA 6020B</u>												
Sodium	ND	0.0500	0.100	mg/L	1	---	---	---	---	---	---	
<b>LCS (1070959-BS1)</b>												
<u>EPA 6020B</u>												
Sodium	2.74	0.0500	0.100	mg/L	1	2.78	---	98	80-120%	---	---	
<b>Duplicate (1070959-DUP1)</b>												
<u>QC Source Sample: Non-SDG (A1G0655-02)</u>												
Sodium	12.3	0.0500	0.100	mg/L	1	---	11.6	---	---	6	20%	
<b>Matrix Spike (1070959-MS2)</b>												
<u>QC Source Sample: Non-SDG (A1G0655-02)</u>												
<u>EPA 6020B</u>												
Sodium	14.4	0.0500	0.100	mg/L	1	2.78	11.6	102	75-125%	---	---	

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## **ANALYTICAL REPORT**

Apex Laboratories, LLC

**6700 S.W. Sandburg Street**

Tigard, OR 97223

**503-718-2323**

ORELAP ID: QR100062

GSI Water Solutions

**55 SW Yamhill St, Ste 300  
Portland, OR 97209**

Project: ATI Acid Sump

Project Number: **0168**

Project Manager: **Renee Fowler**

Report ID:

A1G0674 - 08 12 21 1344

## QUALITY CONTROL (QC) SAMPLE RESULTS

## Anions by Ion Chromatography

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 1070852 - Method Prep: Aq</b>											<b>Water</b>	
<b>Blank (1070852-BLK1)</b>											Prepared: 07/27/21 10:32 Analyzed: 07/27/21 11:46	
<u>EPA 300.0</u>												
Sulfate	ND	0.500	1.00	mg/L	1	---	---	---	---	---	---	---
<b>LCS (1070852-BS1)</b>											Prepared: 07/27/21 10:32 Analyzed: 07/27/21 12:08	
<u>EPA 300.0</u>												
Sulfate	8.03	0.500	1.00	mg/L	1	8.00	---	100	90-110%	---	---	---
<b>Duplicate (1070852-DUP3)</b>											Prepared: 07/27/21 10:32 Analyzed: 07/27/21 15:46	
<u>QC Source Sample: GW-AS9-initial (A1G0674-08RE1)</u>												
<u>EPA 300.0</u>												
Sulfate	314	5.00	10.0	mg/L	10	---	318	---	---	1	5%	Q-16
<b>Matrix Spike (1070852-MS3)</b>											Prepared: 07/27/21 10:32 Analyzed: 07/27/21 16:07	
<u>QC Source Sample: GW-AS9-initial (A1G0674-08RE1)</u>												
<u>EPA 300.0</u>												
Sulfate	395	5.00	10.0	mg/L	10	80.0	318	96	84-119%	---	---	Q-16

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

GSI Water Solutions55 SW Yamhill St, Ste 300  
Portland, OR 97209Project: ATI Acid SumpProject Number: **0168**Project Manager: **Renee Fowler**Report ID:**A1G0674 - 08 12 21 1344**

## SAMPLE PREPARATION INFORMATION

## Volatile Organic Compounds by EPA 8260D

Prep: EPA 5035A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 1070802</u>							
A1G0674-01	Soil	5035A/8260D	07/22/21 11:25	07/22/21 11:25	6.89g/5mL	5g/5mL	0.73
A1G0674-02	Soil	5035A/8260D	07/22/21 10:55	07/22/21 10:55	5.67g/5mL	5g/5mL	0.88
A1G0674-03	Soil	5035A/8260D	07/22/21 12:10	07/22/21 12:10	6.07g/5mL	5g/5mL	0.82
A1G0674-04	Soil	5035A/8260D	07/22/21 12:50	07/22/21 12:50	5.42g/5mL	5g/5mL	0.92
A1G0674-05	Soil	5035A/8260D	07/22/21 14:40	07/22/21 14:40	6.79g/5mL	5g/5mL	0.74
<u>Batch: 1070843</u>							
A1G0674-06	Soil	5035A/8260D	07/23/21 11:20	07/23/21 11:20	6.07g/5mL	5g/5mL	0.82
A1G0674-07	Soil	5035A/8260D	07/22/21 16:15	07/22/21 16:15	6.69g/5mL	5g/5mL	0.75

## Total Metals by EPA 6020B (ICPMS)

Prep: EPA 3015A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 1070959</u>							
A1G0674-08	Water	EPA 6020B	07/21/21 14:40	07/29/21 13:11	5mL/50mL	45mL/50mL	9.00

## Anions by Ion Chromatography

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 1070852</u>							
A1G0674-08RE1	Water	EPA 300.0	07/21/21 14:40	07/27/21 10:32	5mL/5mL	5mL/5mL	1.00

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Philip Nerenberg, Lab Director



## ANALYTICAL REPORT

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

**GSI Water Solutions**

55 SW Yamhill St, Ste 300  
Portland, OR 97209

Project: **ATI Acid Sump**

Project Number: **0168**

Project Manager: **Renee Fowler**

**Report ID:**

**A1G0674 - 08 12 21 1344**

## QUALIFIER DEFINITIONS

### **Client Sample and Quality Control (QC) Sample Qualifier Definitions:**

#### **Apex Laboratories**

- E** Estimated Value. The result is above the calibration range of the instrument.
- ICV-01** Estimated Result. Initial Calibration Verification (ICV) failed high. There is no effect on non-detect results.
- J** Estimated Result. Result detected below the lowest point of the calibration curve, but above the specified MDL.
- M-02** Due to matrix interference, this analyte cannot be accurately quantified. The reported result is estimated.
- Q-04** Spike recovery and/or RPD is outside control limits due to a non-homogeneous sample matrix.
- Q-05** Analyses are not controlled on RPD values from sample and duplicate concentrations that are below 5 times the reporting level.
- Q-16** Reanalysis of an original Batch QC sample.
- Q-54** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +10%. The results are reported as Estimated Values.
- Q-54a** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +17%. The results are reported as Estimated Values.
- Q-54b** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +19%. The results are reported as Estimated Values.
- Q-54c** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +5%. The results are reported as Estimated Values.
- Q-54d** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -1%. The results are reported as Estimated Values.
- Q-54e** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -11%. The results are reported as Estimated Values.
- Q-54f** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -20%. The results are reported as Estimated Values.
- Q-54g** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -4%. The results are reported as Estimated Values.
- Q-54h** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -5%. The results are reported as Estimated Values.
- Q-54i** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -6%. The results are reported as Estimated Values.
- Q-54j** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -8%. The results are reported as Estimated Values.
- Q-54k** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -9%. The results are reported as Estimated Values.

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**ANALYTICAL REPORT**

**Apex Laboratories, LLC**

**6700 S.W. Sandburg Street**

**Tigard, OR 97223**

**503-718-2323**

**ORELAP ID: OR100062**

**GSI Water Solutions**

**55 SW Yamhill St, Ste 300**

**Portland, OR 97209**

**Project: ATI Acid Sump**

**Project Number: 0168**

**Report ID:**

**Project Manager: Renee Fowler**

**A1G0674 - 08 12 21 1344**

- Q-55** Daily CCV/LCS recovery for this analyte was below the +/-20% criteria listed in EPA 8260, however there is adequate sensitivity to ensure detection at the reporting level.
- Q-56** Daily CCV/LCS recovery for this analyte was above the +/-20% criteria listed in EPA 8260
- R-02** The Reporting Limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample.

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A handwritten signature in black ink that reads "Philip Nerenberg".

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Philip Nerenberg, Lab Director

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## ANALYTICAL REPORT

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

**GSI Water Solutions**

55 SW Yamhill St, Ste 300  
Portland, OR 97209

Project: **ATI Acid Sump**

Project Number: **0168**

Project Manager: **Renee Fowler**

**Report ID:**

**A1G0674 - 08 12 21 1344**

### REPORTING NOTES AND CONVENTIONS:

#### Abbreviations:

- DET Analyte DETECTED at or above the detection or reporting limit.  
ND Analyte NOT DETECTED at or above the detection or reporting limit.  
NR Result Not Reported  
RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

#### Detection Limits: Limit of Detection (LOD)

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).

If no value is listed ('----'), then the data has not been evaluated below the Reporting Limit.

#### Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

#### Reporting Conventions:

- Basis: Results for soil samples are generally reported on a 100% dry weight basis.  
The Result Basis is listed following the units as "dry", "wet", or " " (blank) designation.
- "dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")  
See Percent Solids section for details of dry weight analysis.
- "wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
- " " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

#### QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

#### Miscellaneous Notes:

- "---" QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
- "\*\*\*" Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

#### Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to  $\frac{1}{2}$  the Reporting Limit (RL).

- For Blank hits falling between  $\frac{1}{2}$  the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.
  - For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.
- For further details, please request a copy of this document.

Apex Laboratories

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Philip Nerenberg, Lab Director

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### REPORTING NOTES AND CONVENTIONS (Cont.):

**Blanks (Cont.):**

Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level.

**Preparation Notes:**

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

**Sampling and Preservation Notes:**

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.

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Philip Nerenberg, Lab Director

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Project: **ATI Acid Sump**

Project Number: **0168**

Project Manager: **Renee Fowler**

**Report ID:**

**A1G0674 - 08 12 21 1344**

## LABORATORY ACCREDITATION INFORMATION

**ORELAP Certification ID: OR100062 (Primary Accreditation)**

**EPA ID: OR01039**

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

### **Apex Laboratories**

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation
<u>All reported analytes are included in Apex Laboratories' current ORELAP scope.</u>					

### **Secondary Accreditations**

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

### **Subcontract Laboratory Accreditations**

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation.

Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

### **Field Testing Parameters**

Results for Field Tested data are provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

Apex Laboratories

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**Apex Laboratories, LLC**

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ORELAP ID: QR100062

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Portland, OR 97209**

## **ANALYTICAL REPORT**

Project: **ATI Acid Sump**

Project Number: **0168**

Project Manager: **Renee Fowler**

**Report ID:**

A1G0674 - 08 12 21 1344

CHAIN OF CUSTODY							Lab # A160674	COC 1 of 1				
Company: GASI Water Solutions Project Mgr: Address: 55 SW Vendrell St. STE 300 OR		Project Name: ATI Acid Swap Phone: 503-718-2323 Email: <a href="mailto:Rauer@gasius.com">Rauer@gasius.com</a>		Project #: O168		PO #						
ANALYSIS REQUEST							Archive					
SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	RCRMA Metals (8)	TCLP Metals (8)	TCLP Diss.	TCLP	AL Sb, As, Ba, Be, Cd, Cr, Cu, Fe, Hg, Mn, Mo, Ni, Pb, Se, Ag, Zn, V	
9845-8-0-8-5		7/22/11	125	S	2	X						
9845-145-150		7/22/11	055	S	2	X						
9844-80-9-0		7/22/11	210	S	2	X						
98a3-8-0-9-0		7/22/11	250	S	2	X						
98c7-8-0-9-0		7/22/11	440	S	2	X						
98a7-5c-6-0		7/23/11	210	S	2	X						
98a6-159-16-4		7/22/11	165	S	2	X						
98a7-459-16-1		7/21/11	1440	W	2	X						
							Normal Turn Around Time (TAT) = 10 Business Days				SPECIAL INSTRUCTIONS:	
TAT Requested (circle) 1 DAY      2 DAY      3 DAY							Please include Mike Rauer and Kali Dresser on the distribution list for sample log in and laboratory report.					
4 DAY      5 DAY      Other: _____												
SAMPLES ARE HELD FOR 30 DAYS							RELINQUISHED BY:		RECEIVED BY:			
Signature:		Date: 7/23/11	Received By:	Date: 7/23/11	RElinquished By:	Date: 7/23/11	Received By:	Date: 7/23/11				
Printed Name: Joe Sherald		Time: 1605	Printed Name: Tina Boddy	Time: 1605	Printed Name: Tina Boddy	Time: 1605	Printed Name: Company: GASI	Time: Company: GASI				

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Philip Rosenberg

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Philip Nerenberg, Lab Director

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## ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

GSI Water Solutions

55 SW Yamhill St, Ste 300  
Portland, OR 97209

Project: ATI Acid Sump

Project Number: 0168

Project Manager: Renee Fowler

Report ID:

A1G0674 - 08 12 21 1344

## APEX LABS COOLER RECEIPT FORM

Client: GSI water Solutions Element WO#: A1 60674

Project/Project #: ATI Acid Sump 0168

## Delivery Info:

Date/time received: 7/23/21 @ 16:05 By: TAG

Delivered by: Apex Client  ESS FedEx UPS Swift Senvoy SDS Other

Cooler Inspection Date/time inspected: 7/23/21 @ 16:05 By: TAG

Chain of Custody included? Yes  No Custody seals? Yes  No Signed/dated by client? Yes  No Signed/dated by Apex? Yes  No 

Cooler #1 Cooler #2 Cooler #3 Cooler #4 Cooler #5 Cooler #6 Cooler #7

Temperature (°C) 5.6

Received on ice? (Y/N) Y

Temp. blanks? (Y/N) N

Ice type: (Gel/Real/Other) Real

Condition: good

Cooler out of temp? (Y/N) Possible reason why:

Green dots applied to out of temperature samples? Yes/No

Out of temperature samples form initiated? Yes/No

Sample Inspection: Date/time inspected: 7/23/21 @ 17:38 By: MAS

All samples intact? Yes  No  Comments: 98A5-14.5-15.0Bottle labels/COCs agree? Yes  No  Comments: 98A5-14.5-15.0: containers read

98A5-14.5-15. 98A4-8.0-9.0: 12 containers reads 98a=8.0-9.0. 98a2-8.0-9.0:

COC/container discrepancies form initiated? Yes  No Containers/volumes received appropriate for analysis? Yes  No  Comments: no jar

received for dry weight. 98a3-8.0-9.0: 12 MeOH VOA's received dry.

Do VOA vials have visible headspace? Yes  No  NA

Comments:

Water samples: pH checked: Yes  No  NA pH appropriate? Yes  No  NA

Comments:

Additional information: 12 containers reads 98a-8.0-9.0. GW-AS9-initial: no time on containers.

Labeled by: MAS

Witness: AB

Cooler Inspected by:

MAS

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